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Worldwide Report

NUCLEAR DEVELOPMENT AND PROLIFERATION

No. 184

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ANALYSIS OF PARTY NUCLEAR POSITIONS AS ELECTION NEARS

Brisbane THE COURIER-MAIL in English 9 Feb 83 p 5

[Article by Adrian McGregor]

[Text]

A tiny, voluntarily funded organisation, with a full-time staff of one, but a subterranean influence upon tens of thousands of voters, is set to play an important role in two near-Brisbane electorates in the Federal election.

The organisation is CANP, Campaign Against Nuclear Power, and the seats are those of Fadden and Fisher, prospective sites for uranium enrichment plants in Queensland.

Fadden is held by Liberal Don Cameron, with a 1.6 percent majority, and Fisher by Evan Adermann for the National Party, with a safe 9.8 percent margin.

But the formation of branches of CANP to organise public protests against Federal Government enrichment plant proposals for the areas has added an element of volatility to the two Government-held seats.

Said Don Cameron: "Some people are getting their knickers into such a knot you'd think we were putting nuclear power plants up instead of enrichment plants."

"For the sake of peace and quiet I'd be more than happy to have the plants out of south-east Queensland."

Sites originally suggested for enrichment plants were in South Australia and Queensland, but the ALP Premier of South Australia, John Bannon, has since all but ruled out his State.

The Queensland sites proposed are between Boonah and Beaudesert in Fadden and at Caboolture in Fisher.

CANP at this stage is not supporting any particular candidates in the two seats. Campaign spokesman Ron Leeks, said CANP

enjoyed membership across the political spectrum.

"Obviously we have a lot of support from the ALP, the Democrats and the unions, but our purpose is to empower local people to have control of their own affairs," he said.

"If our democracy has any meaning at all our activities will have some political impact." Last October CANP conducted an extensive street poll in Caboolture which found that nearly 90 percent of those polled opposed a uranium enrichment plant in their area.

About 75 percent opposed such a plant anywhere in Australia.

Based upon this a group of concerned residents, the Caboolture Environment Defence Association, plans an anti-enrichment rally in the Caboolture Shire Hall this Sunday.

On October 22 last year Don Cameron letterboxed homes in Boonah with information leaflets basically supporting enrichment plants and paid for similar material to be inserted in 4000 Beaudesert Times newspapers.

In November a public meeting organised by CANP was attended by 100 Boonah residents to hear lectures on enrichment plants. A similar meeting in Beaudesert soon after combined with Boonah to form the Beaudesert Anti-Nuclear Group.

CANP has already succeeded in having the local government councils of Brisbane, Ipswich, the Gold Coast and Pine Rivers declare themselves nuclear-free zones.

Victoria has 24 nuclear-free local government zones and New South Wales 21.

The Premier, Mr Bjelke-Petersen, has ridiculed such declarations as not worth "a cup of cold water".

But perhaps he, like the Brisbane City Council, may underestimate the groundswell of public feeling against introducing nuclear energy into Queensland.

Last September the Brisbane Lord Mayor, Alderman Roy Harvey, wrote to CANP declining to declare Brisbane such a zone because, as a local government authority, such a decision would be "totally ineffective".

Alderman Harvey advised CANP to approach Federal and State Members because they had the real power of decision making in the matter.

He wrote that CANP should not confuse the public into believing that any local authority could enforce such a declaration.

Four months later, on January 27, in which time controversy had grown about Beaudesert and Caboolture, the City Council declared Brisbane a nuclear free zone, no explanations given.

CANP has maintained an active public role since 1976 when the findings of the Ranger Uranium Inquiry were published.

From this grew the anti-uranium marches which in turn became submerged beneath the civil liberties marches through Brisbane.

On March 29, 1979, the Three Mile Island nuclear power plant accident in America gave the campaign renewed impetus, a momentum which has been maintained through such issues as Mary Kathleen and Ben Lomond uranium mining.

Although the group protested against visits by American nuclear powered warships, its main object is against civil, rather than military, uses of nuclear energy.

EXPERTS DISCUSS SOVIET NUCLEAR THREAT TO LOCAL SITES

Perth THE WEST AUSTRALIAN in English 1 Feb 83 p 13

[Article by Peter Schumpeter]

[Text] **MELBOURNE:** The Defence Department is not taking the possibility of Soviet nuclear attacks on Cockburn Sound seriously enough, according to an Australian National University defence strategist.

Dr Desmond Ball said that the people of Perth and Darwin, which could both suffer in a war between the United States and Soviet Union, appeared to have been left unprotected by the Government.

Dr Ball said that Cockburn Sound and Darwin were among a number of sites that could be attacked in a war.

He said that the joint U.S.-Australian spy base at Pine Gap, near Alice Springs, Nurrungar, in South Australia, and North-West Cape appeared to be certain targets in a nuclear war.

Second

In a second category were Cockburn Sound, which was used by U.S. hunter-killer submarines, and Darwin, which could support B52 bomber operations.

A third category was the main Australian cities—and these were most unlikely to be attacked.

"The Soviet Union by the time it expended its forces against U.S.

missile fields, U.S. submarines, U.S. command control stations, Nato forces—it's not going to have that many warheads that it can just start knocking off every major Western city around the world," Dr Ball, of the ANU's strategic and defence studies centre, said.

Risks

"So I think the consequences of a major nuclear war for Australia would be the fall-out effects of attacks on North-West Cape, Pine Gap and Nurrungar, with some risk that Darwin and Perth could well be incidental targets to Soviet attacks on Cockburn Sound and the air force base at Darwin."

The Defence Department was not taking these consequences seriously enough, he said.

"The Australian Government is yet to fully accept the risks that the three key American installations in Australia pose," he said.

"More should be done in terms of civil defence planning for the

citizens of Alice Springs and also of Whyalla and Port Pirie in South Australia, which could well be affected by fall-out from

any attack on Nurrungar.

"And I think that the citizens in Perth and Darwin have been essentially left unprotected against the possibility of attacks against Cockburn Sound and the Darwin RAAF base."

But Dr Ball stopped short of recommending a national fall-out shelter programme.

"I do not think that there needs to be blast or fall-out shelters deployed or built in the major cities such as Melbourne and Sydney," he said.

"That would be extremely expensive and the likelihood of any nuclear weapons being exploded over Sydney and Melbourne is so low that the expense is not worth it.

"What should be done in the case of Sydney and Melbourne is evacuation planning—more can be done there.

Limited

"But in terms of fall-out programmes, that could really be limited to Alice Springs, to parts of South Australia and to Darwin and Perth."

Dr Ball and nuclear physicist Brian Martin agreed that Australia would not suffer many bad health effects from an all-out nuclear war confined to the northern hemisphere.

They said that the global after-effects of a big nuclear war were likely to be much less devastating than the immediate effects of blast, heat and local fall-out.

Local fall-out is the radioactive material that returns to earth within 24 hours of a nuclear blast. Global fallout takes longer to return.

Dr Martin has been doing research into the global health effects of a full-scale nuclear war.

Effects

Dr Martin said that on present scientific knowledge a big nuclear war between the

United States and the Soviet Union in the northern hemisphere would have the following effects on Australia:

- From global fallout, the death of about 1000 people from cancers and genetic defects over 50 years.

- From changes in the ozone layer, a negligible impact.

- From climatic changes, a tiny chance of any effect.

- From fires, also a negligible impact.

Both Dr Martin and Dr Ball argued that these findings should not make Australians complacent about the threat of nuclear war or indifferent to the deaths of up to 500 million people—a tenth of the world's population—that such a war and its after-effects would be likely to cause.

"Many people will die worldwide from cancers and genetic defects caused by global fallout and possibly from other global effects," Dr Martin said.

"Whether the total is

10,000 or 10,000,000, the suffering and death will be real for those who experience it and should not be discounted by use of comparisons."

"Also, there does exist a chance that major climatic changes, alterations in agricultural productivity or consequences for global ecology could result from nuclear war.

"Simply not enough is known to predict with confidence all the global effects of nuclear war."

U.S. NUCLEAR SHIP VISITS ELICIT PARTY, GOVERNMENT REACTION

Criticism by Democrats

Perth THE WEST AUSTRALIAN in English 18 Jan 83 p 3

[Text]

THE Australian Democrats yesterday criticised the planned visit to WA this week of a U.S. navy nuclear-powered battle group.

The party's national president, Mr Jack Evans, said that the AD opposed any form of nuclear power in

WA and rejected the idea that other nations should bring nuclear material into Australian ports.

The Democrats welcomed navy people, but abhorred the idea of nuclear-powered and armed ships sitting off the Perth metropolitan area.

Defense Ministry Clarification

Canberra THE AUSTRALIAN in English 25 Jan 83 p 2

[Article by William Pinwill]

[Text] THE revised rules covering visits by nuclear-powered ships did not mean a relaxation of safety standards, the Minister for Defence, Mr Sinclair, said yesterday.

In a statement issued in Canberra, Mr Sinclair sought to dispel the impression created by his speech to Parliament on December 3 that safety standards had been lowered for nuclear-powered ship visits to Australian ports.

The December speech omitted any reference to previous rules for indemnity and liability spelled out in a document called the US Standard Statement, and made no mention of port safety organisations

stipulated in an annexure to the 1976 conditions of entry.

Mr Sinclair said yesterday that the earlier documents were still valid.

"The revised conditions continue the same arrangements for liability and indemnity in the unlikely event of an accident which have been in place for some years," he said.

"Assurances on these matters, which have been previously provided to Australia in the form of the Standard Statement by the US Government to all countries visited by US nuclear-powered warships, still apply.

"Nor do the new conditions replace detailed guidelines for

the establishment of port safety organisations contained in Annexure C to the 1976 document on Environmental Considerations of Visits of Nuclear Powered Warships to Australia. These guidelines remain valid and will continue to be implemented."

A spokesman for Mr Sinclair said later that the changes to the conditions of entry were being incorporated in an operations manual which would be made public when the revisions were complete.

The latest clarifications by the Minister will take some of the heat out of the political debate over nuclear-powered ship visits.

SCIENTISTS FORM BRANCH OF U.S. ANTINUCLEAR ORGANIZATION

Canberra THE AUSTRALIAN in English 2 Feb 83 p 21

[Article by Kathleen Alexander]

[Text]

AS THE anti-nuclear movement grows among American academics, Australian scientists have formed a group to protest nuclear proliferation.

Scientists Against Nuclear Arms has 180 members — researchers, engineers and technologists mainly from universities and the CSIRO.

Formed last September, it parallels the growing activism of American academics which has led to a number of new courses on nuclear issues on campuses there.

Last week, the American Physical Society, whose 32,000 physicist members work for government, industry and educational institutions, called for an indefinite ban on nuclear tests and limits on nuclear arms.

In a resolution at its annual meeting, the society said the stockpile of nuclear weapons around the world contains the explosive power of more than one million Hiroshima bombs.

"A general nuclear war would kill hundreds of millions of people and the after effects ... are certain to be catastrophic for the survivors and

could destroy civilisation," the society said.

The Australian branch of SANA was formed by a retired CSIRO engineer, Mr Maston Beard, after he read about the group while holidaying in the United Kingdom.

A SANA statement points out, in the past, scientists have been so obviously associated in the public mind with the production of weapons of mass destruction, they appear to give tacit professional approval to the continuation of such a trend.

"Scientists, with a few notable exceptions, have tended to play Pilate and wash their hands of any moral responsibility for what was done with their research, and indeed this attitude has sometimes been held up as an example of science's noble objectivity and neutrality," it says.

But, it was essential scientists opposed to the proliferation and stockpiling of nuclear weapons should declare their views as a professional body.

The group's primary aim is to halt

and reverse the arms race, particularly in nuclear, biological and chemical weapons, and to promote world peace.

To that end, SANA will make available information on nuclear, biological and chemical weapons to Members of Parliament, the public, and the media.

Educational workshops for SANA members are under way, with subjects ranging from ANZUS, to the nuclear arms race and attempts at control.

"The idea is to develop speakers within the group and produce educational material for the general public," said Mr Beard.

Mr Beard emphasised the group does not concern itself with the uranium mining issue: "We discuss the proliferation problems, the link between nuclear power stations and producing nuclear weapons, but we don't get involved in the general uranium debate, that would make us a different association."

VETERANS CHALLENGE GOVERNMENT ON ATOMIC BOMB TEST FINDINGS

Perth THE WEST AUSTRALIAN in English 1 Feb 83 p 3

[Text]

MELBOURNE: The Australian Nuclear Veterans' Association yesterday called on the Federal Government to answer allegations that radiation readings after the Maralinga atomic-bomb tests were faked.

The association's national coordinator, Mr Harold Crosbie, said in Brisbane: "The Minister for National Development and Energy, Senator Sir John Carrick, has to answer these allegations."

"They are too serious for the Government to go on denying."

A Sydney freelance computer analyst, Mr Doug Rickard (43), has said that he faked readings after radiation metres called dosimeters, were found to have flat batteries.

Estimate

Mr Rickard told London's Sunday Times newspaper that he simply estimated the amount of radiation a person had been exposed to and recorded what he thought was an appropriate figure.

In **CANBERRA**, the Federal Government has reacted cautiously to Mr Rickard's allegations.

But a British Liberal MP, Mr David Alton, said on Sunday that he was so worried over them that he would call for a House of Commons debate.

Mr Rickard twice refused to speak yesterday when contacted in Sydney.

Mr Crosbie said later that Mr Rickard would not speak to the Australian Press until he had received a reply from the Federal Government.

Team

Mr Rickard was a member of the health physics team at Maralinga in South Australia from July 1957 to June 1959.

He has also said that the main method of measuring radiation levels at Maralinga was with badges carrying strips of radiation-sensitive film.

He said the film badges he wore turned so black that measuring equipment was un-

able to take an accurate reading of the radiation level.

Mr Crosbie said yesterday that servicemen had said in the past that equipment measuring radiation levels was faulty.

The association had statements from servicemen involved in Australian atomic tests that their film badges were not numbered serially and that some men brought their film badges back home with them.

Screening

A spokesman for Sir John Carrick said that any health problems possibly caused during the atomic tests would be turned up in a massive screening now under way of the estimated 11,000 people directly involved in the Maralinga programme.

Sir John's department and the Commonwealth Health Department are distributing thousands of detailed questionnaires to people listed in British and Australian records as having been in the test area.

BIDS REQUESTED FOR CONSTRUCTION WORK ON URANIUM MINE

Canberra THE AUSTRALIAN in English 2 Feb 83 p 16

[Article by Don Kirkwood]

[Text]

PANCONTINENTAL Mining Ltd said yesterday it had invited tenders for the construction of the \$600 million Jabiluka uranium mine in the Northern Territory.

The tenders, from selected companies, were for the engineering procurement and construction management of the project, which Pancontinental hopes to get under way during the 1983 dry season beginning in March or April.

Pancontinental also announced it had invited and received tenders for the construction of the main access road from the Arnhem Highway to the project area and for a bridge across the Magela Creek.

"The company maintained active negotiations with several utilities with a view to concluding sales contracts and continued its marketing program through discussions with other potential customers," the company said.

As *The Australian* reported on January 15, Pancontinental is on the verge of signing a \$130 million contract with the Central Electricity Generating Board of the UK.

This contract would provide for the delivery of 4.3 million pounds of uranium oxide (1960 tonnes) over 10 years from 1987.

This represents only about half of Jabiluka's designated initial production rate of 3500 tonnes of uranium oxide a year.

But Pancontinental and other Australian uranium producers or intending producers have reason to expect a great deal more from the UK.

The giant Rossing mine in Namibia produces around 5000 tonnes of uranium oxide a year, most of which goes to the

UK. Rossing has never produced full production details.

Those contracts run out in 1987, just about the time the Jabiluka mine would be brought on stream.

Significantly, the CEEGB contract under discussion with Pancontinental mentions the 1950-tonne delivery as a base — the contract could be very much greater than that.

It is believed the UK will not renew its Rossing contracts.

Pancontinental chairman, Mr Tony Grey, and a sales team from the company have been visiting Asia and Europe on a marketing trip.

Further contracts will be sought with a variety of potential customers, ranging from France and West Germany to the US and Japan.

The Jabiluka project will encounter fierce marketing competition from two other Australian uranium projects, one being the existing Ranger project in the Northern Territory and the other the Yeelirrie project in Western Australia.

With the world uranium market showing signs of firming, and with production and supply moving into balance about the time Jabiluka comes on stream, there should be room for all three projects to obtain further contracts for Australian uranium.

The chances that the contracts will be spread around is even more likely given the desire of overseas producers to diversify their sources of supply, even from one mine to another in the same country.

Pancontinental has a 65 per cent interest in the Jabiluka project, with the US-owned Getty Oil holding the balance.

MARY KATHLEEN, RANGER URANIUM MINES SCORE SUCCESSES

Canberra THE AUSTRALIAN in English 25 Jan 83 p 12

[Article by Don Kirkwood]

[Text]

WHILE the last of the nation's first generation uranium mines reported its final major profit yesterday, the largest of the second generation has reported production figures suggesting very high profitability.

Mary Kathleen Uranium Ltd, 51 per cent owned by CRA Ltd, turned in a net profit of \$10.4 million for the year to December 31, compared with \$1.74 million in the previous year.

But after adjusting for abnormal items and changes made to 1981's tax provision, the comparable figure is \$7.48 million.

The group's mining operations finished in September.

MKU paid off its borrowings last year and, as a result, final dividend is 15c a share, which compares with 2c a share in the previous year.

Until its loans were paid out, MKU's dividend policy was restricted.

No interim dividend was paid in either year.

The 1982 dividend absorbs

\$11.08 million, more than the annual profit, and so the group will have to dip into reserves to pay it.

But the company provided \$7.65 million for depreciation, which ought not to be needed, compared with \$8.32 million in the previous year.

MKU still has to meet contracts for the supply of 337.9 tonnes of uranium oxide to Japanese utilities during 1983 and 1984, which were to be met from the stockpile established by September.

This uranium has been shipped to conversion plants in France and Canada ahead of time, as envisaged last year.

The 1982 profit was struck on production of 859 tonnes of uranium oxide, so it is clear that net profit this year, assuming the 1983 and 1984 contracted sales are brought to account in 1983, will be much lower.

This is despite the fact 337.9 tonnes of 1982's output was to meet 1983 and 1984 contracts.

The new mine which appears to be producing at full

contracted capacity is Energy Resources of Australia's Ranger mine in the Northern Territory.

Revenue

ERA began production in September 1981, and has consistently achieved output at the rate of at least 3000 tonnes of uranium oxide a year.

In the six months to December 31, ERA produced 1578.86 tonnes of uranium oxide, which is covered by long-term contracts at a price of about \$35 a lb.

This means annual revenue is running at about \$250 million and annual profit ought to be about \$50 million - welcome news indeed for ERA's two largest shareholders, EZ Industries and Peko-Wallsend.

At that rate, ERA should earn about 12.5c a share a large part of which will be paid in dividends.

The potential exists for ERA to produce at a much higher rate than 3000 tonnes a year, and in 25 years' time - the life of the Mary Kathleen mine - it still should be producing at full steam.

AUSTRALIA

BRIEFS

'NUCLEAR-FREE' BRISBANE--Brisbane had been declared a nuclear free zone, the Lord Mayor, Alderman Harvey, said yesterday. He said the establishment and co-ordination committee had agreed to this as an indication of the council's opposition to the development of any nuclear-based industries in or near Brisbane. The next council meeting early next month is expected to endorse the decision. Ald. Harvey said 16 signs would be erected at appropriate places in Brisbane and on its boundaries to announce the city was a nuclear free zone. One sign would be erected in Ann Street near King George Square. He said the move was in line with Australian Labor Party policy and followed similar moves by local authorities throughout Australia. However, the council will be hamstrung if its nuclear free declaration is challenged. For example, American nuclear powered and armed warships will still be able to visit Brisbane because the State Government controls all waterways. The Government controls main roads and railways so uranium can still be transported through the city. Ald. Harvey would not comment on the council's inability to enforce some aspects of the policy. But he said any company trying to set up a nuclear power station in or near Brisbane would certainly get short shrift from the council. [By Andrew McKenzie] [Text] [Brisbane THE COURIER-MAIL in English 26 Jan 83 p 8]

MONAZITE BAN EASED--THE Australian Railways Union has temporarily lifted its ban on hauling monazite from Geraldton to Fremantle while the issue is investigated by the ACTU. The WA branch of the ARU notified Westrail of its decision to refuse radioactive loads late last month. Since then a meeting of officials from other unions in the sand-mining industry decided to refer the matter to the ACTU. The action on monazite has been taken on the grounds that it contains thorium which is used in the nuclear cycle overseas. Since the ban was imposed two cargoes have been road-freighted to Fremantle. The first load to go by rail since the ban will be dispatched next Monday. The WA secretary of the ARU, Mr Jim Hanley, said yesterday that the suspension of the ban did not mean that the union's policy no longer applied. However, the union was an affiliate of the ACTU, whose practice was to have all unions in an industry discuss action that affected the industry. [Perth THE WEST AUSTRALIAN in English 18 Jan 83 p 13]

UNPROTESTED URANIUM LOADING--DARWIN--Uranium yellowcake worth an estimated \$40 million crossed the Darwin wharves yesterday--quietly. In contrast with the previous loading, there was not a single protester in sight. The yellowcake, from Energy Resources of Australia Ltd's Ranger mine in the Alligator Rivers uranium province, was being loaded aboard the British-registered ship Meadowbank at Fort Hill wharf. Forty-three shipping containers, each carrying about 13 tonnes of processed uranium ore, were being loaded from road trains which travelled in convoy last night from the mine site, 230km south-east of Darwin. A Ranger spokesman said that the uranium was bound for three separate enrichment plants in Britain, the United States and Canada. The ore, which had been sold under contract to six different buyers, would be enriched for use in nuclear power stations. The Meadowbank is due to leave today. Public protest has been synonymous with uranium shipments in Darwin in the past. During the last shipment anti-nuclear protesters chained themselves to the wharf gates and were eventually cut away and arrested by the police. [Perth THE WEST AUSTRALIAN in English 25 Jan 83 p 24]

CSO: 5100/7518

BRAZIL

BRIEFS

NUCLEBRAS WILL SHIP URANIUM--The uranium processing plant of Nuclebras, located in Pocos de Caldas, Minas Gerais, is going to ship more than 56 tons of uranium to France this week, which will bring the grand total to 345 tons. Some 289 tons have already been shipped in four lots since August of last year. Cargo ship Lloyd Marselha, which is anchored in the Santos Pier, will load the shipment which is divided in four containers. The uranium will go to Comurhex, France, to be converted into uranium hexafluoride. This uranium will then be sent to the Urenco Plant in England where it will be processed into fuel elements which will be used for recharging the Angra I Nuclear Plant and for the first charge of Angra II. [Excerpt] [PY300133 Sao Paulo O ESTADO DE SAO PAULO in Portuguese 24 Mar 83 p 38]

CSO: 5100/2049

BRIEFS

URANIUM RESERVES ESTIMATES--The country is estimated to have 67,000 tons of uranium ore reserves, which is sufficient to meet our demands. Stating this in the Rajya Sabha today, the minister of state for science and technology, Shivraj Patil, said our annual requirement of uranium is about 213 tons. We are in the process of developing uranium oxide. Patil said, except for Tarapur atomic powerplant, we are using natural uranium as fuel for other atomic powerplants. We are getting enriched uranium from France under an agreement for the Tarapur plant, he said. [Text] [BK241156 Delhi Domestic Service in English 0830 GMT 24 Mar 83]

ASSISTANCE TO EGYPT DENIED--India does not propose to assist Egypt in setting up an atomic energy center in that country. The prime minister told the Rajya Sabha today that the two countries have an existing bilateral cooperation agreement on various aspects of peaceful uses of atomic energy. Mrs Gandhi also denied that any proposal is under consideration between India and Pakistan for reciprocal visit of nuclear scientists between the two countries. [Text] [BK241206 Delhi Domestic Service in English 0830 GMT 24 Mar 83]

CSO: 5100/4707

DEVELOPING COUNTRIES' NEED FOR SMALL NUCLEAR POWER PLANTS

Paris L'USINE NOUVELLE in French 10 Feb 83 pp 51-52

[Article by Claude Goudier]

[Text] Is a market for small, medium-power nuclear plants for developing countries being created? This is now a current issue, as a result of requests recently made of France by Gabon and Morocco to provide them with a small nuclear power plant.

The emergence of a market for small nuclear power plants for the PVD [Developing Countries] is a new phenomenon. To date, requests for power plants had generally come from more industrialized countries which wanted large "turnkey" plants. But according to staff members of the IAEA [International Atomic Energy Agency] in Vienna, this was to be expected. They predict the development of nuclear energy in about a half dozen of the developing countries and advocate the use of small reactors in which the loss of scale economies would theoretically be compensated by the simplification of these reactors, which would still offer the same level of safety as the larger facilities. The Chinese have chosen this option, developing a 300 MW unit themselves.

Technicatome, a subsidiary of the CEA [Atomic Energy Commission], which owns 90 percent, and of EDF [French Electric Company], which holds 10 percent of its stock, agrees with the AIEA staff. Along with its military activities related to the construction of reactor units for the submarines used in the nuclear strike force, Technicatome has studied this issue quite carefully. Working in cooperation with EDF, it has even prepared technical documents spelling out the characteristics of a 300 MW light water nuclear power plant for medium-sized power systems, particularly in the PVD.

The reactors of these plants are typified by their capacity, which should make extensive prefabrication possible, including in many cases, their installation on a barge entirely outfitted in France, and then towed to the site where the reactor is to be used. These are PWR [Pressurized Water Reactor] units with less powerful characteristics than those of our 900-MW PWR units. The possibilities of assembling these units on barges led the CEA to grant a non-exclusive license to ACB [Brittany Construction Facilities], a subsidiary of Alsthom-Atlantique, which is in theory to handle commercial development and sales of these reactors.

But at present no plant of this type has yet been built in France. To remedy this gap, Framatome, which builds high-power plants, from 900 to 1300 MW for EDF, is going to work with Technicatome.

Framatome may transfer to Technicatome its great industrial knowhow in the field of nuclear energy and offer the use of its high performance production facilities. But in this operation, Framatome is also seeking other markets. The orders awarded by EDF are drawing to an end, and there is some uncertainty about the future rate of our nuclear program. In addition, the export market for large power plants could hardly be worse. Our negotiations with Mexico faded away because of Mexico's financial troubles. The negotiations with Egypt are stuck on the thorny problem of financing. In Greece, the socialist government has canceled that nation's nuclear projects. And Finland, which asked the CEA and French industry to do a feasibility study for a 1000-MW power plant, has still not given its answer.

The market for lower power nuclear plants is more complex than would seem evident at first glance, and for several reasons. Technicatome's partners will have to define the axes of this co-operation. Then a great many studies will have to be redone, particularly in the area of the primary circuit, which on this type of unit uses two loops instead of the three used on the 900 and 1300 MW plants. This means at least 2 good years of additional studies and--this is something basic--the construction of a demonstration unit, followed by a testing period, is essential.

In addition, we find that not only does a 300 MW unit deliver a more expensive kilowatt-hour than a larger plant, for scale economies are no longer a factor, but such a plant can not be inserted in just any electric power system. It is generally agreed that no unit of an electric power system should provide

more than 10 percent of its total output. So, based on this criterion, Gabon should have a system with a 3000-MW capacity, which is far from being the case. Morocco, however, is better suited, for it wants to use nuclear energy not only to produce electricity, but also for the desalinization of its sea water. Morocco produces 5 billion KWH, compared with France's production of 266 billion.

We should list the prerequisites for the use of nuclear energy in a developing country: a national legal system, a solid infrastructure in terms of the organization of adequate human resources, technical competence enabling decisions to be made and technology transfers to be organized, a sufficient level of industrial development, and an electricity transmission system which can provide stable operation of the system during normal operation and also during transitional abnormal conditions.

In this field, Morocco does have some nuclear technicians trained by the CEA, and it seems that Morocco is greatly interested in this project, for Framatome engineers have made several trips to Morocco. In addition, as Morocco is rich in phosphates, it does have access to uranium, for the process of extracting it from phosphoric acid is well known. However, its cost is high. Gabon has none of these advantages, but it does have uranium reserves making it the sixth uranium producer in the world, along with its oil money. So the last obstacle is one of size: this will depend on the solvency of the PVD and on the financial conditions set by the countries providing the units, and by international financial institutions.

7679

CSO: 5100/2569

ALLEGED NUCLEAR THREAT OF U.S. TORREJON BASE

Madrid MUNDO OBRERO in Spanish 25 Feb-3 Mar 83 pp 26-28

[Text] Spain's current situation with respect to the American bases rests on a very peculiar calculating error: The UCD [Democratic Center Union], then in the government, was having trouble with its political calendar. It thought that it had time to saddle us with NATO before the Spanish-Yankee treaty expired. It did not happen that way and both Madrid and Washington had to resort to a botched document signed by Perez Llorca (the "Silver Fox"), Spain's minister of foreign affairs, and Terence Todman (U.S. ambassador) on 2 July 1982. An "agreement" that is not at all suitable for the Spanish people, an agreement that, among other things, converts the base at Torrejon de Ardoz into the possible atomic pantheon of Madrid.

The Torrejon base is 23 km from the Puerta del Sol, the geographic center of Madrid and of Spain. But what is certain is that there is a continuous splat-tering of housing and towns all the way up to the end of its runways. It is the industrial corridor from Madrid to Guadalajara, thickly populated, a metropolitan area with a tremendous density where from one hour to the next we are playing with the lives of millions of citizens and we will continue to do that if democracy, not God, does nothing about it.

It is not a matter of sensational journalism; it is not an exaggerated view of things. It is the pure and simple truth: Torrejon is one of the immediate "red points" in the unfolding of nuclear war. Or, in other words, in the event that a generalized East-West conflict--the third world war--breaks out, immediately an atomic bomb would fall on the Yankee installations at Torrejon.

Why, how, what would be the effect of that bomb? The answer resembles a science-fiction story. In 1955, when construction was begun on Torrejon, it was a secure farm in the Yankee military cold-war strategy because it was safe: it was not a reachable target for Soviet arms. But today the Warsaw Pact forces not only have the capability of reaching Torrejon but they have the complete certainty of it. And more than that, it is considered certain that at least one SS-20 missile is aimed at the Madrid base: a button activated by a finger and there will be a total catastrophe for the capital of Spain.

The SS-20 missiles are multiple-warhead missiles--they have three warheads of 500 or 600 megatons--that are automatically activated in the event that the Warsaw Pact forces are attacked. Their effects have not been calculated, possibly because to publish something like that would be a true scandal, but they would be some 30 times more destructive than those of an SS-18, which were specified in their day: total destruction in a radius of 21 km around the point of impact and another 85 km with radioactive effects, burns because of high temperatures, permanent contamination and all of the inhuman horror involved in the atomic mushroom. Torrejon, Alcala de Henares, Madrid, Guadalajara and many other important localities would become less than ghost cities; they, and much more, would remain simple memories in the history books.

Does, then, the importance of Torrejon justify such "attention?"

Everything seems to indicate that it does. Torrejon is the site of very important U.S. air forces: the 16th Air Force and the 401st Fighter Wing. It has the longest landing field in all of Europe, 4,200 meters, and the area for parking aircraft is more than sufficient for all of the planes of the Spanish Air Force. And above all, the most powerful and complete Control and Alarm Center in all of the peninsula is found at Torrejon. Located there are the systems capable of destroying all of the other transmission centers in Spain, including the apparatus of radio amateurs. Not even a bird can fly over our air space--unless it does it along the ground--without being detected from Torrejon. And it is not necessary to say who has this formidable apparatus under his control, even though sovereignty over the base may be Spanish and the United States may legally simply be allies or forces with the right to use the installations.

What the Yankees do or do not do, what they have or do not have in Torrejon is a face-down card. There are, of course, some guarantees in regard to their role in accordance with the previously cited agreement. Nevertheless, it cannot be proved that the Yankees are not using the base for purposes that have nothing to do with Spanish interests.

The U.S. aircraft have the freedom to take off and fly between their various "allied" bases within and outside of Spain. In this way, they can leave for Germany and in reality go to Israel. They can also transport or carry atomic material, even though it is officially prohibited--or better, they have to get Spanish authorization--because the military authorities of our Air Force are generally trusting and do not supervise the cargo. According to the 1982 agreement, the bases cannot be used for foreign objectives, to serve exclusively American interests. But what guarantee is there for this other than good faith? The aircraft with the Yankee flag go from continent to continent, they come directly from the United States, they land after a stop in Italy, Greece or Turkey and in the same manner that their crews have their pockets full of drugs for trafficking in the streets of Torrejon, it could be that their cargo holds are full of arms destined for the Middle East or any other point.

Many times it has been suspected that those aircraft were assiduously flying the route United States-Azores-Torrejon de Ardoz-Israel, a route that cannot be controlled by the Warsaw Pact countries, while they were transporting all

manner of material and personnel to intervene in the Arab-Israeli conflict, in open conflict with the Spanish posture. It has never been positively demonstrated but the employment of the same type of aircraft (the C-130 transport plane, among others) is strong evidence.

Since July of last year, everything related to the base can be seen in a new light: an intense NATO tone. Todman and Perez Llorca spoke openly on intimate terms as NATO members and the agreement itself characterizes itself in one of its points as a complement to the agreement on the statute of forces among NATO member countries. An agreement, according to the Yankee legislation, is something that is one step below a treaty--what we formerly had with the United States--and does not require the approval of the Yankee senate to be signed. In our case, it does not matter from Washington's point of view, since it is considered something provisional prior to the entrance--or should we say the "no exit"--of Spain into NATO. That treaty expired 21 September 1981 and was extended during 8 months with the additional scandal being that this extension was submitted to parliament for approval when 7 of those 8 months had already passed (only the Communist Parliamentary Group and some other delegates independent of each other provided any decided opposition) and then automatically the 1-year period foreseen for the dismantling of the bases went into effect.

In fact, not a single screw was removed. Everything was entangled in the UCD government in the face of the entrance into NATO. That is why Spain's entry into NATO was so extraordinarily bungled and when at last it came time to sign the new agreement it was an open secret that we would become the new NATO chip, thanks to Calvo-Sotelo and through a simple parliamentary majority. The chapter was as shameful as the one in 1959 when, in the words of writer Sanchez Drago, General Franco trotted up the runways of Barajas Airport to embrace another general who now appears before us in a myth-making television series: General Eisenhower, alias "Ike."

Without the permission of the people, the United States established its bases at Torrejon, Zaragoza, Rota and Moron, along with another 18 lesser installations throughout our territory. Again, without the consent of that people, those bases are being converted into NATO war centers. Their personnel as well will be under the legal provisions of the NATO Statute signed in 1951 in London.

The latter is not very important, because the Yankee military personnel on our soil were already operating with complete impunity. For some time, the neighbors in Torrejon have known that it is the foreign soldiers who are introducing industrial quantities of drugs. Formerly, they sold them openly on the streets without leaving their cars and any infraction by them was not going to be prosecuted by our police because it was established procedure that a word from the Yankees that "they were on duty" was enough to prevent any Spanish legal action against them. And of course they were always on duty.

Nevertheless, today the life of the U.S. community is almost separate from the town of Torrejon. The Yankee base is a small city made up of more than 500 officers and almost 4,000 soldiers who themselves have almost everything--from

the American milk that comes to them by air to motion pictures, from the clothing of their countrymen to hamburgers. The Yankees do not leave a peseta in the town--except for housing rent, which thanks to them has gone out of sight --and "on the other side of the border" they have their doctors, their colleges and even their churches.

There is little friction but neither are there commercial benefits for Torrejon. According to the new agreement, Spain will be the supplier of very diverse, principally industrial, products for the bases that were formerly self-sufficient. But even that remains to be seen and in any case, it will not benefit the economy of Torrejon, nor will it in that of Rota or the other localities that directly support the bases.

What Torrejon does have is air traffic with a take-off or landing every 10 minutes on the average. This means a terrific noise that makes school classes and normal life difficult, even to the point of having generated a frightening index of ear problems. Having a third of the municipal area occupied by the base has not even helped the municipal government collect the license fees on the "cars" of the Yankee soldiers or maintain some jobs that day by day are being turned over to the family members of the U.S. military personnel. In practice, the legal stipulation of three Spanish workers for every Yankee is worthless.

The economic aid has been as ridiculous as that envelope with 30,000 pesetas that was given to the previous mayor in April 1980 when the talk was of millions of dollars. Really a joke compared with the possibility that millions of Spaniards might die in the name of the stars and stripes of that flag which, they say, assures us our freedom.

4746

CSO: 5100/2578

SPAIN

GOVERNMENT INDECISION ON NONPROLIFERATION TREATY

Madrid EL PAIS in Spanish 5 Mar 83 p 17

[Article by Miguel Angel Aguilar]

[Excerpts] Madrid-- On 9 March the PCE will launch its campaign on the NATO referendum. Observers point to the visible differences in pro and con views between the Moncloa, the residence of the prime minister, and the Santa Cruz Palace, headquarters of the ministry of foreign affairs, on whether or not Spain should sign the Nuclear Non-Proliferation Treaty, which was signed in Washington, London, and Moscow on 1 July 1968, and which took effect on 5 March 1970.

At the new prime minister's investiture session, on 1 December, the deputy Marcos Vizcaya of the PNV [Basque Nationalist Party] asked the candidate to give his views on the signing of the Nuclear Non-Proliferation Treaty. In response Felipe Gonzalez stated his favorable position, "but on the condition that we obtain sufficient information so that the treaty could not be used to block the nuclear supplies we need for Spain." In any event, he announced that his government will oppose the nuclearization of Spain.

The AP [Popular Alliance] spokesman for foreign affairs, who is also the deputy from Granada, Guillermo Kirkpatrick, does not feel it is purely a matter of coincidence that this question was raised by a member of the PNV, and in this he sees the shadow of the Lemoniz [nuclear power plant], and a lack of information on the peaceful uses of nuclear energy. According to Kirkpatrick, a career diplomat who is familiar with these matters, signing the treaty would mean the loss of Spain's autonomous position in relation to the United States. However, the PCE supports the signing of the treaty, in accordance with its position against the use of nuclear weapons. The PCE maintains that Spain, while subject to the attitudes of third parties, could make some changes.

The treaty has been signed by 116 of the world's independent nations. France, China, Byelorussia, and the Ukraine, along with Spain, are among those which have not signed it. Spain's previous governments have rejected pressures to sign it, feeling that it imposes restrictions and obligations beyond the minimum which every state should accept. The diplomats who have followed this issue closely feel that the treaty is unfair and that it establishes inequality between the nations which now possess nuclear weapons, which are allowed to keep and increase their arsenal, and those countries which do not have them, which are subjected to severe controls, and which are not offered the slightest protection.

Furthermore, Spain has no nuclear weapons and does not wish to have any, because they could be used against Spain, and it has offered guarantees on its research and civilian facilities. The experts say that it would be senseless to sign the treaty, as it is not known now whether there are nuclear weapons in Gibraltar. Finally, according to the thinking prevailing at the ministry of foreign affairs, the treaty only consolidates the nuclear monopoly and the bloc policy, and has proven its uselessness in practical terms ever since it was put into effect.

7679

CSO: 5100/2571

BASQUE ANTI-NUCLEAR COMMITTEES HOLD DEMONSTRATIONS

Guipuzcoa EGIN in Spanish 27 Feb 83 pp 1, 3

[Text] Members of the Basque Country Anti-Nuclear Committees gathered and chained themselves yesterday in front of the Ministry of Industry and Energy in Madrid, and in front of the provincial government buildings in Bilbao, San Sebastian and Pamplona respectively to protest the lack of a response from Minister Carlos Solchaga in regard to the holding of a public debate on the Lemoniz plant, as well as the statements which he made about starting up the nuclear plant.

With these actions, and in a press conference held yesterday afternoon in the state capital, the anti-nuclearists announced the start of a campaign in the Basque Country, as well as the circulation of a dossier on the position of the PSOE [Spanish Socialist Workers Party] regarding Lemoniz, the contents of which they summed up for the members of the press who attended their information session. In this way the anti-nuclearists denounced in Madrid "the lack of a clear reply concerning the pro-nuclear plans" of a socialist government which, as the dossier of the anti-nuclear Basques indicates, has taken a 360 degree turn in its energy policy since its first demonstrations against nuclear energy—ideas propounded by Alfonso Guerra himself up to the year 1981—to come to the point of 2 months ago defending the starting up of the Lemoniz nuclear plant as if it were essential.

During the course of the day yesterday, the only place the police intervened was in Bilbao, where they proceeded to arrest four anti-nuclearists who had chained themselves in front of the provincial government building of Vizcaya in the Bilboa "elliptical" plaza.

Amid shouts of "Face it, Solchaga, we know who pays you," approximately 100 persons carried signs and chained themselves yesterday morning in front of the headquarters of the Ministry of Industry and Energy in Madrid. The idea of carrying out this action came from the Basque Country Anti-Nuclear Committees, and 40 of their members travelled in cars from the four provinces of the southern Basque Country to Madrid for this purpose. The Coordinating Committee of Madrid Ecological Groups also joined them to show solidarity. During the chaining, which lasted one hour, no incidents were reported, in spite of the demands from some members of the police that they abandon their positions, which did happen once those present felt they had carried out their objectives of protest. Other similar demonstrations took place simultaneously, with this one in Bilbao, San Sebastian and Pamplona.

The reasons motivating this attitude go back to the statements made last 20 December by Mr Solchaga, the minister of industry and energy, when he announced his intention of starting up the Lemoniz nuclear plant. In reaction to this, the Basque Country Anti-Nuclear Committees presented a paper on 11 February, a copy of which they have duly sealed in the General Registry, wherein they requested the head of the Ministry of Industry to hold a public debate which would be broadcast live on radio and television. In this document they set a period of 2 days to receive an answer; otherwise it would be understood that their request had not been taken into consideration.

Later yesterday afternoon the members of the Basque Country Anti-Nuclear Committees held a press conference in the headquarters of the Association for the Study and Protection of Nature--AEPDN--where they gave a report of their point of view on the Lemoniz affair. "We want to accomplish all this by means of a dialogue," they declared, echoing what the PSOE had said in 1978, "but if they don't want to listen to us, they will bear all the responsibility for what may result from their position." They also denounced the devious maneuver of the head of the Ministry of Industry, who in certain statements to Basque Television in Vitoria said that he could not agree to the debate because it had been requested through an unofficial procedure, by means of a telegram. "The real reason that they are turning down the debate," a member of the EAKA said "is because they have no arguments on their side. Their intransigence is like that of the previous governments, and they seem to be continuing the position of not finding a democratic solution for the subject of Lemoniz."

In the opinion of the EAKA, the protest objectives which they were trying to achieve with the visit to Madrid have been fulfilled. They plan to carry out an information campaign and to mobilize people for a large-scale demonstration around 19 March.

Finally they produced a dossier analyzing the policy which the PSOE has carried out regarding the Lemoniz nuclear plant; stating in this dossier that "it is clear that the attitude of the PSOE in the Lemoniz controversy has not been at all consistent. Side by side with extremely harsh attacks on the nuclear plant you can find arguments which are no less ardent in favor of completing it and putting it into operation." It ends by demanding a clear response from the socialists as to whether they mean to submit to the interests of the electric companies and banks, or on the other hand to find a democratic solution to the Lemoniz question.

Police Break Up Bilbao Anti-Nuclear Gathering

Yesterday the police used force to break up a concentration of anti-nuclear groups which had stationed themselves in front of the Vizcaya provincial government building in the Vizcayan capital in order to protest--along with other groups from the rest of the Basque Country and in Madrid--the position of "silence" taken by the minister of industry, Carlos Solchaga, in reaction to the call for a public debate which already 2 weeks ago had been publicly made to him by the Anti-Nuclear Committees.

Moments after 12:30 pm, the time which had been set for the anti-nuclear rally, a group of about 50 persons, carrying signs, chained themselves in front of the Vizcaya provincial government building in the Plaza Moyua, and stayed chained there for somewhat more than a half hour, right on the sidewalk, until the police intervened to cut their chains and disperse them. During the rally, the demonstrators uttered various shouts in favor of dismantling Lemoniz, against the PSOE, and in favor of a debate with the PSOE and also sang various songs condemning nuclear energy, and others against Iberduero and its management. Meanwhile, traffic was blocked off in the area for more than a half hour, since the chained people were blocking it by their presence on the sidewalk.

Shortly after midday, various police cars approached, containing some members of the police who got out and cut the chains of the anti-nuclear protestors. During this process verbal confrontations took place among the demonstrators, because the police wanted to also take away their chains, and the anti-nuclearists wanted to prevent this. As things went, the police finally took the offensive with even more force, rounding them up, administering blows, and making four arrests. The anti-riot squad immediately arrived, which made those who were able to do so flee the scene. Later traffic returned to normal.

Yesterday evening four persons who had taken part in the anti-nuclear chaining were still being detained. They were in the Bilbao Main Police Headquarters. The HB [Popular Unity] representative in parliament for Vizcaya, Perico Solabarria, took an interest in the arrested people and on the authorization of the provincial governor was able to see each of the four detainees. Also, family members of some of those arrested who were concerned about them were able to see them.

The provincial governor said they will be charged "with disturbing the peace" under article 246 of the Penal Code, and he did not know--he told Perico Solabarria--when they would be brought to trial. In the Bilbao Main Police Headquarters, Solabarria was also told that perhaps one of the prisoners might be charged with injuring a policeman during the struggle which took place when the anti-nuclear protesters were being unchained by the police.

76 Carry Signs in San Sebastian

Yesterday at 6 pm 76 people who had chained themselves, along with 70 more who were handing out pamphlets explaining the demands being made by the anti-nuclear committees demonstrated for a half hour in front of the Guipuzcoa provincial government building without their actions causing any kind of incident.

After carrying out their protest in front of the government building, the sign-carriers set off in a demonstration to the Avenida de la Libertad in Donostia. After making two circuits, and in view of the appearance of a police contingent, they proceeded to go to the Iberduero building where they placed their posters and signs. After painting the front of the company building, they dispersed.

Also, as we were informed very late yesterday evening, about 20 people carrying signs carried out a demonstration similar to the above ones through the central streets of the town of Eibar.

"Nuclear Explosion" in Pamplona

A "nuclear explosion" sponsored by the Neighbors' Associations of Pamplona, the Ecological Committees and the Unemployed Committees took place at 1 pm yesterday in Pamplona, in protest against the rise in prices and taxes, and to show solidarity with the workers of Ignacio Soria and the other struggling companies.

"Lemoniz apurtu" and Iberduero kanpora" were the most frequently heard shouts during the ceremony, which consisted of a demonstration which began in the Plaza del Castillo. About 50 persons participated, the majority of them carrying signs.

From the Plaza del Castillo the group continued through the streets of San Nicolas, proceeding to the Paseo de Sarasate, to then continue through Garcia Castanon, Avenida de Roncesvalles, Carlos III, and finally end in the Plaza de las Merindades, across from the provincial government office. The majority of those present carried signs bearing slogans like "Instead of nuclear plants: pure air, natural beer, yours truly and a bed," "No nuclear waste or price rises," "Bikes, yes; cars, no" and "What do we get for change? pennies," and other similar ones. During the course of the demonstration cries were also heard such as "To save energy, get rid of the police," "Amnistia bai, nuklearrik ez," or "Iberduero is a butcher, kills the people for money." The demonstration ended at the Pamplona provincial government building, where the participants shouted the slogans of the gathering and placed their signs in front of the building.

Also, the Navarra Anti-Nuclear and Ecological Committees have begun a campaign against the starting up of the Lemoniz plant by the socialist government, and against the nuclear plants. The first action was yesterday's demonstration. In an announcement, they stated that the negative response of Minister Carlos Solchaga toward a public debate on television on the topic of the nuclear plants demonstrate the enormous turn-about which the PSOE has taken during the last 3 years as regards nuclear topics, going from a policy of opposition to nuclear plants in 1980 to their present pro-nuclear position.

8131

CSO: 5100/2575

NUCLEAR SITES ASSESSED FROM SAFETY STANDPOINT

Madrid ENERGIA NUCLEAR in Spanish Jan-Feb 83 pp 27-46

[Article by Nuclear Safety Council member A. de Acha: "The 'Permanent' Evaluation of Nuclear Sites in Spain, the Perspective of the Nuclear Safety Agency"]

[Text] A contribution to the "Seminar on Safety Features Relating to the Siting of Nuclear Powerplants," organized by IAEA and scheduled to be held in Buenos Aires from 17 to 21 March of last year, which took place in Vienna from 22 to 26 November 1982.

1. Introduction

The comments contained in this report are, as its title indicates, expressed from the perspective of the nuclear safety agency. However, it should be noted that they are not based on an official position of that agency, but rather are the sole responsibility of their author.

1.1. The Nuclear Safety Council [CSN]

Until a little over 2 years ago, the Spanish Nuclear Energy Board (JEN) was responsible for the promotion and control of nuclear energy in Spain. Then, the latter mission was assigned to the Nuclear Safety Council (CSN), an agency created by Law 15/1980, of 22 April (LCSN, BOE 25.04.80), which was set up and began its activities a year later, and whose Statute (ECSN) was established by Royal Decree 1157/1982, of 30 April (BOE 07.06.82).

CSN was created "as a public law entity, independent of the Central State Administration, with corporate status and its own assets, independent of those of the State, and as the only agency with authority in the field of nuclear safety and radiological protection" (LCSN-Article 1, Paragraph 1.1) in the country. It will be required to submit "on a half-yearly basis, to the Congress of Deputies and the Senate, a report on the progress of its activities" (LCSN-Article 11). "The authorizations or permits which it is necessary to grant to any of the public administrations may not be refused or bound by conditions" on account of the powers of the agency in question, "for reasons of safety, the assessment of which is incumbent on the Council" (LCSN-Article 3, Paragraph 3.1).

One of the many functions assigned to CSN, in view of its powers, is the issuance of reports to the Ministry of Industry and Energy (MIE) preceding the decisions made by the latter in connection with the granting of prior authorization for the

construction, putting into operation, utilization or closing of nuclear and radioactive facilities, as the case may be. These reports "will be mandatory in all instances and binding as well, when they are negative or denying in nature regarding a permit grant, and similarly with respect to the terms that they set, in the event that they are positive" (LCSN-Article 2, Paragraph 2.b.2). Hence, MIE is still the entity responsible for processing records and granting authorizations affecting the aforementioned facilities, "except for what is stipulated in the respective statutes for the Autonomous Communities, if pertinent" (LCSN-Article 3, Paragraph 3.2). And so, the CSN reports will, understandably, be mandatory and binding for those Autonomies "in the same instances and on the same terms as they are for the State Administration, according to the terms of the law establishing the Council, when the former have assumed the pertinent powers, as provided in Article 3 of that law" (ECSN-Article 6).

CSN, in turn, "will hand down a decision or provide information in all matters within its jurisdiction that have been submitted for its opinion by the Courts of Justice, the government or its members, the Autonomous Communities and the organs of Public Administration" (ECSN-Article 8). "When, in dealing with any matter, the hearing of the Council has been omitted, its chairman will make this known to the proper person" (ECSN-Article 10).

However, CSN is qualified to delegate activities that have been assigned it to the Autonomies. Hence, "it may assign to the Autonomous Communities the discharge of functions commended to it, based on the general criteria agreed upon by the Council itself for their discharge," and "it will stipulate the regulations and oversee the discharge of the functions that it has assigned to the Autonomous Communities, in all instances being able to take over and revoke them" (ECSN-Article 11).

The performance of the work associated with CSN will be, essentially, the responsibility of its technical personnel. Nevertheless, "in accordance with the regulations set in the Statute, it may hire native or foreign personnel to perform specific jobs, or to work for a period not to exceed 1 year, as well as to prepare studies and issue certain reports and opinions with the entities or individuals that it deems feasible" (LCSN-Article 8, Paragraph 8.2).

3.1. Comments on the Current Status of the Spanish Technical-Administrative Procedure for Selecting and Evaluating Nuclear Sites

The technical-administrative procedure to be followed for guaranteeing nuclear safety and radiological protection in the Spanish nuclear and radioactive facilities, affecting their licensing period in particular, is outlined in Law 25/1964, of 29 April, on nuclear energy (LEN, BOE 04.03.64), and is subsequently expanded upon in Decree 2869/1972, of 21 July (BOE 24.10.72), whereby approval is given for the Regulations on Nuclear and Radioactive Facilities (RINR); although the 1980 LCSN previously cited made major variations in the regulations in question, now requiring a thorough review of their content, in addition to the need for explaining, completing and even changing other features thereof as a result of the experience gained from their use. The technical-administrative procedures for the evaluation of the sites of nuclear and radioactive facilities are obviously stipulated in the aforementioned RINR and LCSN.

Table I in this report offers some general comments on the "permanent" evaluation; in other words, the one made throughout all the phases that constitute the life of a first-class nuclear or radioactive facility, of the site thereof. Table II also contains some remarks on the current Spanish situation in this area.

The former Prior Authorization (AP) of the aforementioned facilities, described in its time as "an official acknowledgment of the proposed purpose and the selected site" (RINR-Article 6), now also termed "on site" (LCSN-Article 2, Paragraph b.1), has been changed, now beginning a new process designed to select the plant location site. To this end, CSN will have to establish "the objective criteria for the selection of the site of first-class nuclear and radioactive facilities, after a proposal has been made by the Autonomous Communities, or Preautonomous Entities, or in their default, the provinces, in the manner and time period established by the regulations" (LCSN-Article 2, Paragraph 2.a).

The current progress of the prior phase, in turn, entails another requirement relating to those demanded previously. From now on, MIE will have, for subsequent forwarding to CSN and preceding the latter's decision, the report from those Autonomous Communities or Preautonomous Entities or, in their default, the provinces which consider themselves to be affected by the location sought, so that they may express themselves "regarding the conformance of the proposal to the rules and regulations in force and, if need be, to the authority assigned to them, including the previous reports from the affected municipalities in relation to their authority with regard to providing for the territory and the environment" (LCSN-Article 3, Paragraph 3.3). To be sure, the role to be played in the matter by the public per se must be subjected to a thorough review, in order to lend it the proper significance, so as to prevent a possible undervaluation thereof, as a result of the fact that the country's democratization may give rise to an overvaluation of the institutions that must intervene in the matter, to the detriment of the role to be played in this respect by the aforementioned public.

The devising of the objective criteria just mentioned, both those relating to the administrative and methodological aspects of the matter and those which are merely technical in this respect, will begin soon. However, it is anticipated that the situation will become somewhat complicated, since it is contingent not only on the very noteworthy geological, geotechnical, seismological, meteorological, hydrological, ecological, demographic and developmental differences existing in Spain, but also on the latter's new politico-administrative compartmentalization, which is always highly complex, and more so at the time of its initial implementation.

The establishment of the objective criteria in question will most likely be followed by a discussion of whether or not it is proper to create a bank, either single or subdivided into sections, for the Spanish territory that contains the favorable areas for placement of nuclear powerplants and other facilities associated with the uranium cycle. Although the aforementioned procedure is always positive in the realm of principle, and its practical advantages could be plentiful, it also has contradictory, and even negative features, which must be clearly discussed before making any decision in the matter. These features might warrant the omission of the bank in certain situations, especially that of a country such as ours, which has already approved an excess number of nuclear powerplant sites.

After the promulgation of the LCSN, the Construction Authorization (ACo), and the Permits for Provisional Exploitation (PEP) and Final Exploitation (PED), with the Authorization for Putting Into Operation retain the significance that they have in the current RINR and for this purpose require only a few slight embellishments, both with regard to the evaluation of the site and that of the facility. However, the aforementioned LCSN, for the first time, establishes an Authorization for Closing (ACI) of Spanish nuclear and radioactive facilities which, since it has never existed in our legislation to date, will have to be developed from its foundation, and in all its features.

Finally, it befits us to stress that the authorization mentioned herein relates only to those features of the nuclear facilities that are associated with nuclear safety and radiological protection. Hence, it is granted "without precluding the concessions, authorization and licenses that must be granted by other ministries, agencies, corporations and municipal councils, in the area involving their powers, and assets or rights for which they are responsible" (RINR-Article 4).

1. The 'Permanent' Evaluation of a Spanish Nuclear Site

1.1. General Features

The scope to be given here to the term "site" does not relate only to its most customary meaning, that is, the ground on which an industrial facility is to be established; it also includes, along with the geographical, geological, geotechnical and seismological areas involved, the meteorological, hydrological and biophysical areas thereof, as well as the response from the location in question to the contamination resulting from the operation of the aforementioned facility under normal conditions and under accidental circumstances.

Describing this site as nuclear is obviously due to the adjective applied herein to the industrial facilities included in it. According to the classification established by the RINR and the LCSN, and as noted previously, these would be the nuclear ones in the strict sense, and the radioactive ones of the first category; but we shall group both types together under the name nuclear, in order to simplify matters.

As was noted previously, using the adjective "permanent" to describe the site evaluation is due to the fact that this evaluation does not begin and end with the licensing of the facility. That evaluation really starts with the selection of the site in question, a process which may or may not be included in the pertinent regulations, and it also continues, obviously with the variations that are in order, during the operation and closing of the plant.

Therefore, a nuclear site that is suitable from the standpoint of nuclear safety and radiological protection might be defined as a concrete geographical area which could reasonably be claimed to meet the minimal requirements necessary for the establishment of a nuclear facility thereon, as a result of the individual and overall evaluation of certain features on it. Hence, the population really and potentially affected by this facility would not be subjected to undue risks as a result of the radioactivity emanating from the plant.

The minimal requirements in question are, understandably, based on certain technical and/or administrative stipulations in a certain time and space situation, and hence

they may vary, depending on the countries and/or the times. These requirements usually relate, under normal circumstances, to a single feature of the site, but there is also a possibility that some of them may relate to the association of two or more such features, the combination of which, despite the fact that they are individually situated at the pertinent limiting value, and even exceed that value, advises the abandonment of the site selected.

The greater or lesser degree of conservatism in demanding the aforementioned requirements for a site is, within certain limits, based on the greater or lesser importance attributed to the engineering solutions and the specifications for operation of the facility. Both could be overvalued at certain times, understandably coinciding with an undervaluation of those requirements; but the current status of the matter is quite different.

Several reasons, the Harrisburg accident included, and others previous and subsequent to it, have caused a tendency at present to increase the stringency of the aforementioned minimal site requirements; however, without this necessarily implying that those relating to the engineering solutions and the specifications for operation of the facility have to be reduced. Quite the contrary. The discussion which recently arose between the United States and other nations, because the former was considering the feasibility of establishing more stringent criteria for the suitability of its future sites, while the latter thought that such a decision would have negative repercussions on their potential for acceptable sites, has ended with a compromise solution which respects the individual qualities of each country.

The determination and monitoring of the location for placement of the facility is normally carried out in three phases, associated, respectively, with the macro-environment, the meso-environment and the micro-environment thereof. However, it should be made clear that such studies would lack justification if they were not aimed at a better understanding of the site per se.

2.2. The 'Permanent' Evaluation Per Se

As is customary in this type of study, the "permanent" evaluation of a Spanish nuclear site considers three groups of features (Table III). The first one covers those pertaining to the s/f (site with respect to facility) ratio; the second group relates to the f/s (facility with respect to site) ratio; and the third includes three more features described as miscellaneous.

Table IV shows the first group, and Table V the second. Table VI gives a brief account of the CSN responsibilities for evaluating the aforementioned features.

As has been indicated in Table VI, the evaluation of the nuclear parameters of a site is incumbent on the Spanish nuclear safety agency. Nevertheless, technical, economic and even political and public opinion-related reasons advise that this agency have the advice of other competent Spanish government entities, in some manner, for some of these parameters; although their reports to the Council are not mandatory or binding, nor exclusive either, because that would entail a reduction of the authority assigned to this agency. The latter is always the one to decide whether or not the request in these reports based on the need or feasibility thereof is fitting; and the one to judge the suitability of their conclusions,

insofar as the latter relate to nuclear safety and radiological protection; as well as the one that can, without any restriction, have recourse to all other Spanish groups and experts, in the national or a more limited area, as well as international and foreign ones that it may deem fitting.

The technical quality of the advice that the Spanish nuclear safety agency may request from other national government groups in areas of their expertise is a prime objective for the former; because it runs the risk that the bureaucracy may turn the contacts in question into mere administrative red tape. And, insofar as the foreign advice is concerned, it should also be noted that this is required only when, after a very clear identification of the problem to be dealt with, there is found to be a lack of our own resources for resolving it, while at the same time there is an attempt to monitor its progress through native experts associated with the field involved, and as deemed most appropriate in each case.

Table VI also shows that CSN is an authority only for evaluating the radiological impact from the pertinent facilities, whether nuclear or not; whereas other authorities would concern themselves with assessing the rest of the environmental impacts. However, it is not intended that this fact be an obstacle preventing different technical-administrative processes from terminating in a final process assigned to the one stipulated, which might well be the Council itself, which would be held responsible for coordinating those partial processes, subsequently studying the interrelations of some impacts with others, and finally issuing a definitive decision regarding the question. The contrary could, moreover, give rise to administrative chaos, entailing a flawed evaluation of the problem, that would have very unfavorable repercussions on the population's protection against the impact of facilities producing radioactive contamination.

The pre-operational evaluation of the nuclear parameters of a Spanish site is done essentially according to the philosophy of the USNRC Regulatory Guide 1.70, Revision 3. Its monitoring during the plant's operation has not yet started regularly in Spain, although this is occurring in the United States, despite its Systematic Evaluation Program (SEP) for the powerplants in operation, and in the other countries involved in a nuclear program, whether or not they have made an attempt similar to the one just cited.

The evaluation of the radiological impact of our nuclear facilities on the environment is also based on American criteria, but with the individual feature that a series of studies relating to the subject, although associated only with nuclear powerplants, has had to adapt to several guides on nuclear safety issued by the Spanish Nuclear Energy Board. The assessment of the other external impacts of these nuclear facilities, which is somewhat uncoordinated at the moment, as noted previously, should be inspired by the policy set in this regard by the countries which are pioneers in the field; and it would also be fitting that it be backed by its own document on the subject, of the same type as USNRC Regulatory Guide 4.2, Revision 2, or a similar one, which the pertinent authority would have to issue within the shortest possible period of time.

Table VII gives an account of situations to be considered in the monitoring of the site during the operation of the nuclear facility located on it. No one would question the fact that the efforts devoted to the matter in the pre-operational

phase of the plant would prove to be a failure if there were no continuation of the monitoring of the operational, radiological and any other type of impacts, throughout its functioning. But it might be forgotten that there are other areas which require, to a greater or lesser extent, depending on the aspect involved and even on certain individual features of the site, an overseeing after the facility goes into operation.

The fluctuating dynamics of certain nuclear parameters, specifically those relating to the s.l. meteorology and hydrology, requires a continuous monitoring thereof during the operation, from the standpoint of both their improved definition with respect to the plant's normal operation and their significance when a selection has to be made of the proper time for carrying out the controlled release of contaminants, and in the event of incidents or accidents at the facility. The other nuclear parameters should be reviewed in a fixed term operation, for example, every 10 years, so as to take consistent action thereafter. It might also happen that special circumstances make it necessary to reconsider such parameters periodically, more often, in order to take suitable action later; or certain unforeseen events, the types of which are quite varied, might require an immediate assessment of their repercussions on the hypotheses assumed for these parameters at the outset, so as to make the pertinent corrections, if necessary. Both reviews are valid, even for those parameters which, at first glance, might have been described as static in any situation, and even more so with respect to the brief operating life of the facility.

Finally, the closing of the plant entails a prior reconsideration of all the pertinent site-related features, based on the new phase of its life. This reconsideration would understandably have to be followed by a series of actions taken on the site during the closing period.

2.3 Some Comments Based on the Spanish Experience

The comments that could be made, based on the Spanish experience (Figure), regarding the evaluation of nuclear sites are numerous; but the following list thereof is not intended to be exhaustive, nor to give too many details either. We wish to stress only a series of basic points concerning the context in which the matter is framed, and this same position, which might prove useful in some way not only to the countries that are about to begin their nuclear program, but also to those, such as Spain, which already has it under way.

Hence, the points to be cited are the following:

- (1) The evaluation of nuclear sites, from the standpoint of nuclear safety and radiological protection, should be preceded in time by a general regulation governing the evaluation in question, in a broader context, that will cover the entire range of questions included in this evaluation, and that will be clearcut in its interpretation, but not too detailed.
- (2) The individual feature entailing the presence of a prior phase in the Spanish licensing of nuclear facilities, established virtually at the outset of our nuclear program, and relating essentially to the evaluation of the site, has, throughout the years, proven more than sufficiently the correct judgment of the legislator who introduced it.

(3) The evaluation in question should not be undertaken before the creation and functioning of a group responsible for nuclear safety, with its own corporate status and independence as well, which will have to gear itself to the politico-economic conditions of the country involved, to the scope of that country's nuclear program and to the contribution that the country can make to its nuclear safety and radiological protection.

(4) The principle that radiological protection is the end goal of nuclear safety in its broadest sense must inspire both the starting point and the development of the action taken by the agency in question.

(5) The problems associated with nuclear safety must be treated with strong external backing in nearly all countries. Their treatment is so complex that only a few countries, which are precisely the guarantors in this respect for the others, to some extent, not only could be self-sufficient in the field by reason of their scientific and technical development and their economic potential, but also must be, because of the scope of their nuclear program and their nature as exporters of basic technology and supplies to the foreign nuclear industry.

The fact that the problems associated with radiological protection are, nevertheless, a matter that must be resolved essentially within the countries' own borders is another reason to be added to that given in the foregoing point, to reinforce that speciality in the nuclear safety agency. However, this must not entail any detriment to the attention that must be given to the s.s. nuclear safety.

(6) The relations of the nuclear safety agency with the applicants/owners of the facilities must not be too complicated, but this does not imply failure to abide by the established legislation. Guaranteeing nuclear safety and radiological protection is a responsibility of several entities, and the role to be played in this matter by the aforementioned agency must be understood to be another contribution, the most important, if you will, but one more, to the attainment of the aforementioned goals.

(7) The "permanent" evaluation of a specific nuclear site is a long, complex process the economic repercussions of which initially affect the applicant/owner of the facility involved. Hence, an attempt should be made not to complicate or prolong the process in question further still, owing to possible shortcomings in the nuclear safety agency. For the reason given, the latter will have to possess, from its beginning, a group capable of evaluating the site parameters of a nuclear nature and, and another one to calculate the plant's radiological impact.

All of these groups, whose authority will be clearly defined, without unnecessary overlapping, will be functionally connected; although this will not, in principle, entail an organizational inclusion of the former within the latter. The problems to be solved by the group responsible for the nuclear parameters of the site are associated not only with radiological protection, but also with the facility's design and with non-radiological aspects of its emergency plan and physical protection plan.

(8) The site studies assigned to the nuclear safety agency must make maximum use of the country's resources in the area, without unnecessary duplication of the

services existing in other government agencies in the country, and resorting to foreign sources only when there is proof of the impossibility of solving the problem posed with the use of native resources.

(9) The nuclear safety agency must attempt to coordinate the many authorities involved in environmental protection against the various impacts caused by the nuclear facilities, or at least act as a catalyst for all of them.

(10) It is impossible to discuss the evaluation of nuclear sites properly without first having available certain guidelines, documents and plans on the subject. In this way, the inconvenience of having to proceed "anew" in each case will be avoided.

(11) The criterion used in Spain when it is time to make use of the existing nuclear standards, which consists of applying the national ones, from the beginning, when they exist, the international ones if the foregoing are lacking, and those of the country of origin of the project involved when neither of the other two is available, has been bringing acceptable results. This conclusion is, therefore, valid insofar as the evaluation of nuclear sites is concerned.

(12) The nuclear standards of international origin, or from countries that are pioneers in the nuclear industry, could be useful to any other country, provided the latter gears them to its specific conditions. This gearing will take place by means of a prior identification of the deviations involved in the case in question, from the standard that is used, then suitably devising the solutions to be given to such deviations, and finally confining itself to copying (sic) the rest.

(13) The maximum effort to be expended on devising national standards for evaluation of nuclear sites from the standpoint of nuclear safety and radiological protection would appear to have to be made in matters relating to this radiological protection.

(14) The standards used, to be updated when appropriate, must be interpreted as a necessary backing for the work to be done, but not as something justifying immobility or thwarting initiative. Their use must be somewhat critical, including the possibility of departing from them when a better option is properly justified.

(15) The guarantee of quality must be applied to the field, laboratory and office work relating to the evaluation of nuclear sites. In this way, there will be proper assurance of the reliability of the results accrued from such work; although the latter is an area in which a great deal still remains to be accomplished.

(16) The fact that the nuclear site to be evaluated is the final result of a selection process is a good endorsement of the suitability of the location in question. Hence, this process must take place on every occasion; and it would be desirable for it to be checked, for better guarantee thereof, under the official control of the national nuclear safety agency.

The implementation of the process in question must always avoid long, costly or sophisticated processes, and attempt to gear itself, in turn, in every instance, to the resources that the country concerned has for a better resolution of the

issue. These resources may vary greatly from one location to another, because they are essentially contingent on the degree of development therein.

(17) The high price and considerable period of time entailed for the execution of a national bank for nuclear sites, particularly when the basic information relating to all or some of the features to be considered leaves much to be desired, might be confronted with rather meager economic provisions in comparison with the proposed goal and the urgent need to have suitable sites. The nuclear programs of the medium-sized countries are also reduced, becoming better geared to reality now than they were a few years ago; and even the hypotheses used for the bank could become obsolete rapidly, because nuclear technology is fully evolving. The collection of data in highly variegated parts of the national territory could, in turn, create a nuclear controversy, or revive it if it already existed, most especially if the final decisions to be made on the matter were to be delayed excessively. Finally, it does not appear that the experience already gained in the area has been overly stimulating, either from the standpoint of the value of the results accrued in comparison with the effort made, or with respect to the applicability of these results, owing to their political and public opinion implications.

A good reason that could back the preparation of the bank in question, if it were to appear feasible, would be that of serving as a pilot experiment in the execution of a major data bank for the national territory, which could, in its time, be used not only for the placement of nuclear powerplants and other facilities of the uranium cycle, but also when it is time for the country's territorial and urban planning, and in connection with the specific establishment of conventional thermal power plants, other large industries, extensive public works, development enclaves, urban development areas, etc. This solution would combine the outlays, make a considerable reduction in the total value thereof, and make it possible to use the observations obtained in accordance with the requirements of the goal sought in each instance.

(18) It does not appear correct to make an isolated evaluation of one or more of the site parameters, and even less so for the regulatory agency to consider such evaluations approved, if such be the case. The site is an indivisible whole, and the final decision on its must result from an overall evaluation thereof, given the interdependence that exists among all the partial aspects of the whole in question.

(19) The effort expended during the selection and evaluation of the nuclear site would prove rather fruitless if it were not followed by a monitoring of the location involved during the operation and closing of the plant.

20) The technical initiative of the nuclear safety agency's experts involved in the site evaluation must be fostered, since they are the ones directly responsible for the areas assigned to them. They will not have to be overly engrossed, as that agency's other experts are, in their technical-bureaucratic work, in view of the danger that such a situation would entail for the maintenance and improvement of their scientific and technical qualifications and, as a result of this, for the satisfactory discharge of the missions assigned to them.

Hence, it is obvious that their training and improvement, both in the conventional fields with which they are concerned and in the latter's relations with nuclear

safety and radiological protection, must be very carefully provided for by the heads of the nuclear safety agency in question. Therefore, the policy just described demands that there be a constant endeavor to update these technicians in the fields of their competence, through all the suitable types of retraining. Also, in view of the preeminently applied nature of the sciences in which they specialize, they will be periodically involved in field and laboratory work on subjects in their special areas.

(21) Without maximizing the number of technicians cited in the foregoing point, because their efficacy will depend more on their professional standing and good sense than on their large numbers, they must meet the total required; and the ones required will be those making it possible to cover not just some, but all of the areas to be considered in the situation. A proper view of this cannot be obtained without an overall perspective thereof, and that perspective depends on an analysis of all aspects of the problem, and on the interrelationships existing between some facets and others.

Several of the experts in question should be regular personnel, because of the continuity or importance of the missions assigned to them. Others, in view of the more or less sporadic nature of their collaboration, might not be necessary fulltime, and could be hired when the current needs so require.

(22) The support which the national atomic energy agencies have been rendering for the "permanent" evaluation of nuclear sites is being given, essentially, through the publication of standards relating mainly to the licensing period of the facility, the organization of international meetings of various types and the provision of different kinds of advice. Nevertheless, it is fitting to stress that this cooperation will be all the more useful, the better they deal with all the features and periods of this evaluation, the greater attention they pay to the limitations of the countries really using them and the more correctly they anticipate events.

A key issue at present, to which the international agencies involved have been paying great heed, but wherein a great deal still remains to be done, is the site problem associated with the radioactive waste storage facilities. It would be fitting here if these international agencies were to deal with certain aspects of the site on a general level, based on groups of countries with mutual interests, and based on geographical factors or those of other types, in this regard.

(23) Understandably, the site evaluation is not a simple matter, but this should not prompt a "loop the loop" in this respect. Hence, any attempt to exceed what would be a reasonable level of conservatism, or to perform an academic exercise, by precluding scientific inquiries into practical solutions, must be avoided in this evaluation.

(24) No one would doubt that the nuclear safety of a facility is essentially based on the technological guarantees provided by the site, and those relating to the facility per se. Without embarking on a discussion of the relative importance of each, it is nevertheless fitting to stress that there are other guarantees, ranging from a material nature to a non-material type, with great significance in emergency

situations, the potential flaws in which could make it necessary for the degree of conservatism necessitated in the aforementioned technological guarantees to be greater than usual in certain instances.

(25) Any country involved in a nuclear program must, from the beginning thereof, and using whatever investigation it deems pertinent, deal with the site problem associated with the high and medium-low activity waste storage facilities which is certainly still awaiting a solution in certain respects. Its origin obviously stems from the complexity of the problem to be treated, but it must also be admitted that this is also associated with the greater seriousness with which it is sought to deal with the radioactive types, as compared with other types of contamination.

(26) The "permanent" evaluation of nuclear sites must not relate only to the determination and monitoring of concrete locations, but must also include a series of general studies that will facilitate the improved accomplishment of that determination and that monitoring. Therefore, the nuclear safety agency will be concerned with the execution of those studies, either as a promopter, an active partner, a sole or principal executor or collaborator, or at least a supervisor thereof.

(27) The observations relating to the site generated by the facility during its licensing and operation should be used to the maximum extent for the benefit of the national community; and also, if their procurement would not entail too many complications for the owner, and if the general benefit derived from them were great, they should be expanded with the procurement of further new ones.

5. A Final Comment

The evaluation of nuclear sites is actually another measure among those which humans design for the protection of their habitat. "It is obvious that no one is aware of the [words missing from text] 'the' energy of the future, but rather as 'an' additional energy of that future and most likely of the more immediate future." (3) But it is also obvious that the energy in question has, and will have for years, an effect on the environment that must be minimized with all the pertinent means within our reach.

Ecologism, a derivative of the term "ecology," was defined by the first group of ecologists in the world in 1968, as "the endeavor of all those who feel affected by the mass destruction of our habitat," and who are attempting "to recreate an environment in which humans, trees, eagles, fish, plankton and other inhabitants of our planet will survive in good harmony." Disregarding the irrationality that may exist among certain associates, and its strange implications in some instances, with of which are features also occurring in the opposing area, man has begun to become aware of the gradual deterioration of his environment, and of its consequences for the future of his race.

Until very recently, mankind thought that nature was inexhaustible, and that the use made of it meant an improvement in it. Obviously, this notion could have been accepted, with reservations, when the population was small and lacked significant means for attacking the environment in order to benefit from it. The demographic explosion and the massive, indiscriminate exploitation of natural resources, upon the excessive increase of human requirements for nutrition and raw materials, are

giving rise to a series of environmental deterioration processes, some of which are irreversible, owing to both the depletion of those resources and the pollution of the earth.

Nevertheless, there is still time remaining to arouse from its slumber the consumer society in which we live, whose "needs" are increasing day by day, without thereby representing improvements in its quality of life. And controlled fission, despite its risks and provided protection of humans against it is properly guaranteed, would be one of the energy sources to be used, together with other larger and smaller ones, in a gradual transition toward a more logical type of human community, thereby avoiding discontinuity that might prove catastrophic.

It must be recognized that man's concern over protecting his environment has now started to be reflected in many words and papers, and even some laws. However, all of this is usually done from a standpoint of continuism regarding the present type of consumer society; and, furthermore, it is not often embodied in actual deeds, even on the individual scale.

In view of all the foregoing, the technicians involved in the use of controlled fission must feel more responsible than anyone else for the protection of the environment against the impact caused it by nuclear energy; and, whatever their activity may be, they must take maximum care, because the matter must be an endeavor for everyone, to guarantee nuclear safety with the means within their reach. The nuclear experts engaged expressly in protecting that environment, whether they are concerned with evaluating the nuclear parameters of the sites for the uranium cycle facilities, or with the radiological effect of the latter on the former, must be even more aware, if possible, of the role that they are playing.

Thus, the work of these nuclear technicians will be performed with the vast store of truth contained in the ecologists' demand, based on the urgent need that exists to undertake the protection, and also the regeneration of the human habitat, with deeds and not words, as the best guarantee of our species' present and future. And, furthermore, the mentality and knowledge of all of them will serve to improve the implementation of that demand, by contributing to it procedures which avoid utopian and absurd notions and which make proper use of the advances in science and technology.

Bibliography

- (1) Gonzalez de Ubieta, A.; Lopez de Sebastian, A.; De Villota, C.; Blanco, J.M.; and Sala, J.; The selection and process of authorizing nuclear powerplant sites in Spain. The perspective of the electric company. Seminar organized by IAEA in Vienna, on security features related to the site of nuclear powerplants, IAEA-SR-74/7 (1982), 64 pp.
- (2) De Acha, A.; Comments on the organization of the group responsible for evaluating the parameters of the site in the nuclear safety agency. Internal report, IEN-DSN/30/82 - Revision 1 (1982), 7 pp.
- (3) De Acha, A.; Evaluation of the site of a nuclear powerplant from the standpoint of nuclear safety. ENERGIA NUCLEAR, Spain, 116 (1978), 393-410.

Table I

The 'Permanent' Evaluation of the Site of a Nuclear Facility Throughout the Consecutive Stages of Its Life

General Comments

a) Operation of the nuclear facility (E_1).

aa) Licensing of the facility for its operation (E_{11}).

The "permanent" evaluation of the site begins with a decision thereon, which is carried out during the selection and evaluation per se of the site in question, the purpose of which is to properly justify its acceptance or rejection.

aaa) Selection of the site.

A more or less complex process always to be carried out, although lacking an official status in some countries, ending in the preliminary decision regarding the site selected.

aab) Evaluation per se of the site selected.

A process which is always complicated, ending in the decision per se on the site selected, from the standpoint of the plant construction and operation.

ab) Operation per se of the facility (E_{12}).

The concept of a "permanent" evaluation of the site understandably requires its monitoring during the plant's operation. The aforementioned process, whether continuous or discontinuous, as the case may be, and the latter periodic or non-periodic, based upon what is fitting, is applied both in normal situations, pertaining to any case, and under exceptional circumstances; and its immediate result may be the introduction of significant changes in the hypotheses associated with the site selected after E_{11} ; changes which would later result in a revision of the specifications for operation and/or design of the plan and, in extreme cases, even in its closing.

b) Closing of the nuclear facility (E_2).

It is obvious that the "permanent" evaluation of the site does not end upon the termination of the operation of the facility located on it, but rather must continue during its closing, a situation which must certainly be considered when it is time to select the site in question.

ba) Licensing of the facility for its closing (E_{21}).

The "permanent" evaluation of the site entails in this regard a review of the location selected with a view toward the forthcoming closing of the plant, which is of course a phase that may or may not be officially recognized in the country involved.

bb) Closing per se of the facility (E_{22}).

The concept of a "permanent" evaluation of the site now requires its monitoring during the closing of the plant per se. The aforementioned process, like its equivalent in operations, could have as an immediate result the making of significant changes in the hypotheses associated with the location in question after E_{21} ; changes that would later result in the revision of the specifications relating to the monitoring of the closed plant's radiological impact on its surroundings.

Table II

The 'Permanent' Evaluation of the Site of a Nuclear Facility Throughout the Consecutive Stages of Its Life

Some Comments on the Spanish Situation

a) Operation of the nuclear facility (E_1).

aa) Licensing of the facility for its operation (E_{11}).

The "permanent" evaluation of the site during the licensing of the facility for its operation is made essentially according to the requirements stipulated for it by the Regulations on Nuclear and Radioactive Facilities.

aaa) Phase of Prior Authorization or Site (E_{111}).

Insofar as the "permanent" evaluation of the site is concerned, this phase entails an in-depth study, though not an exhaustive one, of it, which must be completed in the following phases, as required by the Regulations on Nuclear and Radioactive Facilities; because the granting of the prior authorization implies "an" official recognition of the location selected from the standpoint of nuclear safety and radiological protection, and not "the" official recognition of the location in question in the two aforementioned respects.

aaaa) Selection of the site (1).

The selection of the site, which was not official in nature until the promulgation of the law creating the Nuclear Safety Board, may only be made after the establishment of the objective criteria on the subject cited in that law, to be carried out in accordance with the terms contained therein.

aaab) Evaluation per se of the site.

This stage, the description of which is rather inadequate in the regulations in effect on nuclear and radioactive facilities, requires a thorough restatement in the revision of those regulations that is under way.

aab) Phase of Authorization for Construction (E_{112}).

The purpose of the phase of authorization for construction, insofar as the "permanent" evaluation of the site is concerned, is to refine the previous assessment thereof, in order to obtain accurate data on it from the standpoint of the proper construction of the plant (2) and the explanation that its operation, both under normal conditions and in accidental circumstances, does not represent any undue risk to the population.

aac) Phase of Authorization for Putting into Operation (E_{113}).

aaca) Subphase of permit for provisional operation (E_{1131}).

The subphase in question supplements E_{111} and E_{112} in connection with the "permanent" evaluation of the site, because it entails an assessment of the site data obtained "during" and not exclusively "with" the construction of the plant, the making of the radiological analytical study both in normal operation and in case of an accident therein (3), and the preparation of the radiological criteria to be applied to the external and physical protection emergency plans (4).

aacb) Subphase of permit for definitive operation (E_{1132}).

The "permanent" evaluation of the site should not entail an updating of the previous information on the subject in the event that a sizable period of time elapses between the granting of the permit for provisional operation and its extensions, and the one relating to the definitive operation; although the Spanish regulations in the matter do not require any express assessment thereof in the subphase that concerns us.

ab) Operation per se of the facility (E_{12}).

The pertinent regulations do not provide specifically for the "permanent" evaluation of the site in this phase, a matter which will have to be cleared up properly during the current revision of the Regulations on Nuclear and Radioactive Facilities that are in force.

ac) Closing of the nuclear facility (E_2).

The closing of the nuclear facility is a matter to be considered officially since the publication of the law creating the Nuclear Safety Council, although not even the development of its regulations has taken place yet. The fact that it was said for the first time in 1980, on the occasion of the authorization for construction

of a nuclear powerplant, that the matter would be the responsibility of the facility's head is a rather vague assertion, lacking in general value, but it is the beginning of the proposal of a philosophy on the subject and implies a certain precedent.

ba) Phase of Authorization for Closing (E_{21}).

Insofar as the "permanent" evaluation of the site is concerned, this phase will have to start to some extent during the aforementioned phases E_{111} and E_{112} ; and its beginning per se will take place during the final years of E_{12} .

bb) Closing per se of the facility (E_{22}).

As has been stated previously, the development of this portion, in any of the respects implied therein, understandably including that relating to the "permanent" evaluation of the site, has not even begun on a regulatory scale.

- (1) Although the selection of the site is included in this Table in the Phase of Prior Authorization, because there are no reasons for a different interpretation at present, the process in question would really be dissociated from that phase if the objective criteria to be established for it were to give it a certain amount of independence from the former, relating, among other things, to administrative and methodological features of the case, which implied acceptance or rejection on the part of the administration for the site selected.
- (2) Since our legislation in this matter is not too clear, and there are no permits in Spain for limited work prior to the granting of the Authorization for Construction, whereby permission would be given for certain works relating directly to nuclear safety, the completion of which would take place under the exclusive responsibility of the owner, but under the supervision of the regulatory agency, in this phase there are usually legal discussions on the scope of this authorization. Without going into them, and without analyzing the negative impact that certain types of work have on public opinion, because the latter considers them already under construction and carried out before the pertinent authorization, it is obvious that one such type of work, excavation, is the best reconnaissance of the site's subsoil that can be carried out.
- (3) The expression "radiological analytical study" also appears in the Nuclear Energy Board's Safety Guide GSN-03/76, although in a more limited sense than in the Regulations on Nuclear and Radioactive Facilities; because the former relates only to nuclear powerplants and to their normal operation. To be sure, the guide in question deems it feasible for this study to be submitted upon requesting the Authorization for Construction, and in turn proposes that the pre-operational and operational program for environmental radiological surveillance which supplements the former be submitted to the administration within a period of approximately a year from the granting of this authorization.
- (4) Although the Spanish regulations require the submission of the emergency plan upon requesting the Permit for Provisional Operation, and do not yet specify the time when the physical protection plan must be submitted to the competent authorities, because the latter is cited for the first time in the law creating the

Nuclear Safety Council, it seems fitting to note that it would be advisable to initiate the treatment of both plans before the application for the aforementioned Permit for Provisional Operation, and also to take them into consideration, to some extent, when it is time to select the site.

Table III

Points to Be Considered in the 'Permanent' Evaluation of a Nuclear Site

- a) Parameters for the site or s/f ratio.
 - aa) Conventional parameters for the site.
 - ab) Nuclear parameters for the site,
 - aba) Geophysical nuclear parameters.
 - abb) Biophysical nuclear parameters.
 - b) Environmental impacts from the facility or f/s ratio.
 - ba) Conventional impacts.
 - baa) Initial impacts.
 - bab) Operational impacts.
 - bac) Post-operational impacts.
 - bb) Radiological impacts.
 - bba) Operational impacts.
 - bbaa) Radiological impact under normal operating conditions.
 - bbab) Radiological impact under accident circumstances.
 - bbb) Post-operational impact.
 - c) Miscellaneous points.
 - ca) Site-design (1) ratio of the facility.
 - cb) Site-emergency plan ratio of the facility.
 - cc) Site-physical protection plan ratio of the facility.
- (1) A term which includes here not only the preparation of the design in question, but also its monitoring during the construction and assembly of the plant, as well as throughout its operation.

Table IV

Parameters of a Nuclear Site

a) Conventional parameters.

This is the term used for the parameters which, since they are not considered to have an essential effect on nuclear safety and radiological protection, are treated more or less the same as their counterparts in the conventional thermal facilities. Since a list of all of them is not pertinent, only the following are stressed:

aa) Cold spot (1).

ab) Public opinion (2).

b) Nuclear parameters.

Included herein are the parameters which, although also considered in conventional thermoelectric facilities, now require more complex analyses than in the latter. Nuclear safety and radiological protection demand a thorough probing into them, and emphasis on certain of their nuances.

ba) Geophysical parameters.

This group contains the parameters relating to the lithosphere, atmosphere and hydrosphere of the site and its surroundings. While those associated with the first of these to some extent lack the capacity to transmit the contamination to the living habitat, the atmosphere and hydrosphere are the preferential routes used by the facility's gas and liquid radioactive effluent for coming into contact with that habitat.

baa) Geological parameters which have an essential effect on the plant design:

baaa) Geography (P_1).

baab) Geology (P_2).

baac) Geotechnics (P_3).

baad) Seismology (P_4).

bab) Parameters relating to the fluid habitats or primary carriers of radioactive contamination, to be taken into account in both the design of the facility and in calculating its impact on the environment.

baba) Meteorology (P_5).

babb) Hydrology.

babba) Continental hydrology.

babbaa) Surface hydrology (P_6).

babbab) Subterranean hydrology, including hydrogeology (P_7).

babbbb) Oceanography (P_8).

bb) Biophysical parameters or biological catch basins for radioactive contamination.

The biophysical parameters relate to the living habitat existing in the area affected in some way by the plant, for which reason the results of the evaluation thereof will affect mainly the estimate on the facility's environmental repercussions.

bba) Ecology (P_9).

bbb) The human habitat.

bbba) Demography (P_{10}).

bbbbb) Human activities.

bbbbba) Use of the soil and water (P_{11}).

bbbbbb) Other human activities (P_{12}).

(1) Specific parameters of a nuclear powerplant.

(2) The treatment to be given to this parameter will be carried out on the basis of its unique nature, yet without this implying a lesser seriousness than that applied in evaluating the technical parameter per se.

Table V

Environmental Impacts of a Nuclear Facility (1)

a) Conventional impacts.

aa) Initial impacts.

aaa) Impacts caused by the field investigations.

aab) Impacts caused by the land preparation.

aac) Impacts caused by the construction.

ab) Operational impacts.

aba) Quantitative impacts.

abaa) Technical impacts.

abaaa) Thermal impact.

abaab) Chemical impact.

abaac) Impact from noise and vibration.

abaad) Magnetic, electrical and radioelectrical impacts
from the air system for transporting electric power.

abab) Socioeconomic impact, assessed through a cost/benefit
analysis.

abb) Qualitative impacts.

abba) Esthetic impact, owing to the facility per se and the
electric power refrigeration and transportation systems.

abbb) Impact based on certain peculiarities of the site (paleon-
tological, archeological or historic value, picturesque
nature, tourist value, etc.).

abbc) Impact on public opinion.

ac) Post-operational impacts.

b) Radiological impacts (2).

ba) Operational impacts.

baa) Radiological impact under normal operating conditions.

bab) Radiological impact under accident circumstances.

bb) Post-operational impact.

(1) The description given relates precisely to a nuclear powerplant.

(2) Typical, though not specific, of the nuclear facilities.

Table VI

Classification of the Features to Be considered in the 'Permanent' Evaluation of the Site of a Nuclear Facility Based on the Spanish Legislation

- a) Fundamental site features from the standpoint of nuclear safety and radiological protection, included in some manner in the Regulations on Nuclear and Radioactive Facilities and the law creating the Nuclear Safety Council.
 - aa) Site features to be evaluated under the responsibility of the Nuclear Safety Council.
 - aaa) Nuclear parameters of the site.
 - aab) The facility's environmental impacts of radiological origin.
 - ab) Site features to be evaluated under responsibility shared between the Nuclear Safety Council and other authorities.
 - aba) Site-facility design ratio.
 - abb) Site-facility emergency plan ratio.
 - bc) Site-facility physical protection plan ratio.
- b) Secondary site features from the standpoint of nuclear safety and radiological protection not expressly included in the Regulations on Nuclear and Radioactive Facilities and the law creating the Nuclear Safety Council.
 - ba) Conventional parameters of the site.
 - bb) Environmental impacts of the conventional type from the facility.

Table VII

Situations to Be Considered in the Monitoring of the Site During the Operation of the Facility Located on It

- a) Monitoring of site variables that are atypical or common in any case.
 - aa) Continuous monitoring.
 - ab) Discontinuous monitoring.
 - aba) Periodic monitoring.
 - abb) Non-periodic monitoring.
- b) Monitoring of site variables that are typical or characteristic of certain cases.
 - ba) Monitoring of site variables to be watched because of the problems that they pose during the entire plant operation and using one of the procedures in the previous section a).

- bb) Reevaluation of site variables to be watched because of situations which arose after the start of the plant's operation, at a certain time in the latter, and subsequent monitoring of these variables, if necessary, following one of the procedures in the aforementioned section a).
- bba) Reevaluation of site variables as a result of the detection of pre-existing questions which, because they were underestimated and even disregarded, were not analyzed at the proper time.
- bbb) Reevaluation of site variables after incidents which were not given any consideration, for whatever reason, before they occurred.
- bbc) Reevaluation of site variables as a result of the necessity or the feasibility of adapting to more conservative requirements than the ones adhered to up until then, after the general acceptance thereof.
- bbd) Reevaluation of site variables for political reasons or reasons based on public opinion which cropped up along the way.

2909

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PARLIAMENTARY MAJORITY BACKS EASED NUCLEAR PLANT LAW

Stockholm DAGENS NYHETER in Swedish 9 Mar 83 p 6

[Article by Ake Ekdahl]

[Text] It will be easier to start up a nuclear power plant, but there will be stricter safety controls once it is in operation. That is the substance of the new legislation the Center Party and the Social Democrats agreed on to replace the old temporary law.

The Center Party member of the state Nuclear Legislation Committee, Karl-Erik Olsson, feels that the temporary law broke down the day that the Liberal Party government then in power approved the start of nuclear power plants under that law.

The temporary law came about as an attempt to unite the desire for nuclear power in the first Falldin government. The prime minister at that time regarded the law as the government's most important document. Center Party people hoped that the temporary law's strict requirement of totally safe storage for nuclear waste could not be met and that the law would act as a ban in consequence.

But the next government, under Liberal leader Ola Ullsten, interpreted the law in such a way that new permits could be granted, which meant that by and large the temporary law had lost all its force.

"The temporary law had the weakness that it was directed toward granting permits, but it left the way open for continued operation," Olsson said today.

In the new law, which will be presented to Energy Minister Birgitta Dahl next Friday, charging a reactor will be permitted if the owner can show that there is a method for storing spent nuclear fuel that is acceptable from the point of view of safety and protection from radiation. The owner must also present a program for research and development of methods of safe treatment and final storage.

There is no longer any mention of "completely safe storage," as called for in the temporary law.

Improvement

"The new law means that granting permits has become easier, but in practical application the requirements are the same as before. The new element now is the link between an operation permit and waste treatment. If this does not work or if there is too little research on increased safety, the operating permit can be revoked. That is an improvement," said Olsson.

"Since we currently have 10 reactors in operation, and will probably soon have 12, it is more important to focus on operating permits than on the old start-up permits," he added.

The annual check on whether reactor owners are meeting these requirements will be made by the Nuclear Fuel Board and ultimately by the government.

"That means it will be possible for us to shut down all the nuclear power in the country if research and safety are not proceeding in acceptable forms," Olsson said.

"The temporary law could supposedly be used to stop the use of nuclear power at four plants and I do not accept the interpretations made in previous government tests," said Olsson.

Criticism

It now remains to be seen if he has his party with him on this new view of nuclear power. Former Energy Minister Olof Johansson criticized the new law on Tuesday because it contained "adaptations that would allow the 11th and 12th reactors to start up," as he put it.

Hydroelectric and Southern Power will request permits to start operating Forsmark 3 and Oskarshamn 3 in May and according to Birgitta Dahl, these requests will be studied under the provisions of the new law, which cannot go into effect before the beginning of next year at the earliest.

It was the conclusion that "totally safe storage of nuclear fuel waste" was a requirement that could not be met in practice, but that one must deal with the situation in the best possible way, that led the Center Party and the Social Democrats closer together with regard to legislation.

The Center Party is continuing to present special demands, such as legislating a nuclear power freeze in the year 2010, a ban on more than 12 reactors and a ban on the Secure thermonuclear reactor and on breeder reactors. The Center Party also wants a legislative ban on the enrichment of nuclear fuel as well as on exporting nuclear substances and all types of nuclear power technology.

But the Social Democrats and the Conservatives do not go along with that.

6578

CSO: 5100/2579

EURATOM SEES PROMISE IN SWEDISH FUSION METHOD

Stockholm DAGENS NYHETER in Swedish 9 Mar 83 p 7

[Article by Roland Gyllander]

[Text] A Swedish solution to one of the big problems in fusion research, plasma enclosure, has inspired such great confidence on the part of Euratom, the EC nuclear research body, that a test facility costing around 3 million kronor will now be built in the cellar of the Technical College's plasma physical institution in Stockholm.

Professor Bo Lehnert and his research group will now have a chance to test on a large scale an idea that has been studied for 9 years.

In a fusion reactor, a plasma, an ionized hydrogen gas, is heated up to hundreds of millions of degrees, so that the hydrogen nuclei are broken down into heavier matter and the energy is released. As yet there are no fusion reactors in practical use. The facilities built so far have all been experimental in nature.

One of the big problems has been to hold together the entire plasma and control its instability. The plasma has a tendency to start twisting and turning like old telephone lines that have been twisted too much. Or it can disintegrate in the same way as a stream of water from a faucet that does not fall evenly and clearly but is broken up into drops and blobs.

Held Together by Magnetic Coils

Therefore, fusion research in the last few decades has concentrated to a large extent on how to hold the plasma together when it is heated up. One of the most studied principles has been applied in the so-called Tokamak machines in which the plasma is held together in a circular stream with the help of external magnetic coils.

But although the tokamaks--the biggest of which to date was put into use at Princeton University on Christmas Eve--have given fusion researchers invaluable knowledge, the problems with this type indicate that future commercial power reactors cannot be based on that principle.

In 1974, Professor Lehnert got the idea for what is now called Extrap, External Ring Trap, a different way of using external magnetic fields to hold the plasma together. Four electrical conductors with a strong current flowing through them run parallel with the plasma. This surrounds them with a magnetic field that forms a kind of tunnel with the plasma in the middle.

Idea Worked as Intended

Through the years the idea has been further developed and tested by Professor Lehnert's research group, in particular associate professors Torbjorn Hellsten and James Drake. Experiments with small test models showed that the idea worked as intended. The plasma stayed together nicely and no wisps or shredding appeared.

The results were presented at an IAEA conference in 1979 and were so convincing that Euratom then approved the idea as a so-called priority project and set aside around 3 million kronor for the construction of a test facility on a large scale.

In this the plasma will be ringshaped, about the same as it is in the Tokamaks, but it will not be surrounded by big magnetic coils but by four ringshaped electrical conductors designed to hold the plasma together and keep it under control.

Wooden Model a Meter High

The machine will be around 1 meter high and so far exists only in the form of a wooden model. The timetable calls for completion of the facility by the end of 1984. It is not a fusion reactor, Professor Lehnert pointed out. It will not supply any energy. But if this model for plasma enclosure works, an enlarged and expanded version of it might be the first practical fusion reactor.

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CSO: 5100/2579

WESTINGHOUSE-BUILT RINGHALS 4 GETTING NEW STEAM GENERATORS

Stockholm SVENSKA DAGBLADET in Swedish 11 Mar 83 p 10

[Article by Margareta Artsman]

[Text] Ringhals--The rebuilding of the Ringhals 4 steam generators has now begun. A rectangular box that looks like a shower nozzle will feed the water in over the tubes in a fine even stream.

It looks simple, but it has cost Westinghouse and Hydroelectric an enormous development effort with countless tests in Alvkärleby's research laboratory.

Hydroelectric estimated that the production decline for Ringhals 3 and 4 will have cost 400 million kronor when the rebuilding is completed this summer.

"We hope that this will be the solution and that the vibrations that have been wearing out the tubes will now stop," Hydroelectric project leader Bertil Agrenius said. "When Number 4 is ready in April, we will start up very carefully and provide breaks for inspection. Then it will be the turn of Ringhals 3."

Ringhals 3 was stopped in October 1981 when it was discovered that there was a leak in the steam generators. Some 40,000 liters of water a minute were flowing in, causing the tubes to vibrate and become worn. About 30 tubes were plugged up.

Last April, Ringhals 3 was put into service again at 40 percent of capacity. Ringhals 4, which was being tested for 5 months at 30 percent of capacity, was stopped at the end of September 1982 to await rebuilding.

Now 50 men are working on Ringhals 4, 25 of them from Westinghouse. Each reactor has three steam generators and takes 2 months to rebuild. It is hoped that Number 4 can be included in the network by fall.

Westinghouse has provided Ringhals with a full-scale model in order to first train the personnel who will install the flow regulators in the

water intake system. The big pipes will be capped and installation will be done with special tools constructed by Westinghouse.

Low Doses of Radiation

There are special reasons for starting with Number 4. The problem of protection from radiation is smaller there and personnel can work freely. But the radiation dosages are very low in both reactors, according to safety chief Krister Egner. The biggest problem is that the men from Westinghouse must work on installation inside a pipe 40 cm in diameter.

"The highest permissible radiation dosage for one person is 3 rems per quarter or 5 rems per year," said Krister Egner. Prior to rebuilding, the total radiation dosage for Number 4 is only 2 man-rems for 50 people and the figure for Number 3 is 70 man-rems. As a basis for comparison, he said that a fuel exchange at Ringhals 2 provides 20-25 man-rems.

Internationally, 15 reactors have the same problem as Ringhals 3 and 4. Westinghouse is currently repairing a reactor in Spain and one in the United States. An independent power company group in the United States has studied the new flow mechanism and reached the conclusion that the rebuilt steam generators could handle 100 percent of the water flow without affecting the tubes significantly. SKI [Swedish Nuclear Power Inspectorate] also thinks the remodeling effort will work.

Before Number 4 is started up at the end of April, Hydroelectric will present a program for test operation and for future full operation. The movement of the tubes at the start will be measured very carefully and the tubes will later be measured regularly through so-called cyclone measurement. The durability of the flow regulators will then be checked repeatedly.

Work on Ringhals 3 will start in June and Hydroelectric estimates it will be operated at reduced capacity until then.

Payment Responsibility Unclear

Who will pay for the remodeling is unclear. The Westinghouse contract is still in effect for Ringhals 4. Negotiations are being held with Westinghouse on the remodeling of Ringhals 3 and Hydroelectric would not comment today on how these talks are going.

Ringhals 1 and 2 are currently in full operation, but nuclear power director Evert Ericsson said that Number 2 has caused concern. Leaks have led to halting operation.

"So we have to accept the fact that we will have to work on Number 2 in the long run."

6578

CSO: 5100/2579

BRIEFS

ANTI-NUCLEAR MOVEMENT DISAPPOINTED--Some 3 years have passed since the popular referendum on nuclear power and the parliamentary decision to phase it out, but we have seen nothing of that yet. On the contrary. That charge was made by the People's Campaign Against Nuclear Power at a meeting in Stockholm on Saturday. Members of the People's Campaign claimed that they have been proved right on one point after another. "Reactors are rusting apart. Costs are rising. The spreading of plutonium is a fact. We have more electricity than ever. The waste problem is as unsolved as it ever was and nuclear power is not saving any jobs either." The People's Campaign is now demanding that the phasing out of nuclear power begin immediately. The government should also appoint a wellrounded committee to study the problem of waste and forbid the use of direct electric heat. [Text] [Stockholm DAGENS NYHETER in Swedish 13 Mar 83 p 8] 6578

'GIANT FILTER' FOR BARSEBACK PLANT--Nuclear Power Plants: Sweden. In Sweden the green light has been given for the construction of a facility for filtering radioactive products in case of reactor accidents. The inspector of nuclear facilities in Sweden has just agreed to the construction of a "giant filter" for the Barseback nuclear power plant. This facility, called "Filtru," is a world first. In case of accident, it allows evacuation from the containment enclosure (reactor building) of the gases and vapors liberated, then their release into the atmosphere in a purified state. Filtra is an enclosure filled with granite gravel capable of retaining the major portion of the radioactive substances liberated. This facility will be housed in a 40m high concrete building 20m in diameter. The construction cost is estimated a \$20 million. [Text] [Paris NUCLELEC in French 21 Feb 83 p 10, 684] 9969

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